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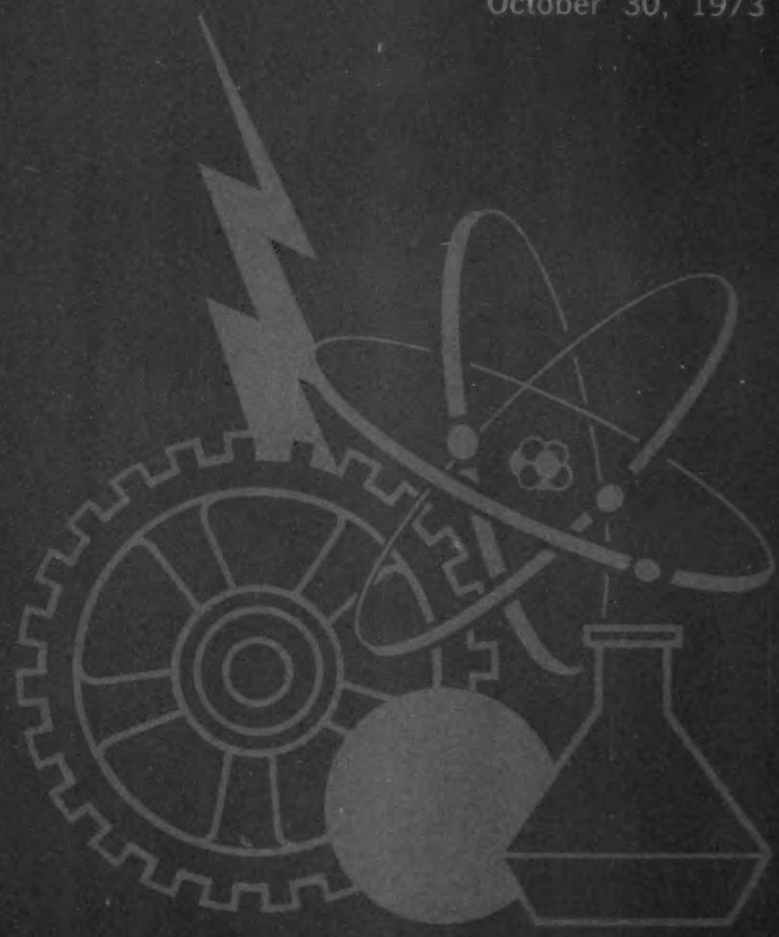
PATENTS

October 30, 1973



U. S. DEPARTMENT OF COMMERCE

Patent Office

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October 30, 1973 Volume 915 Number 5

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PATENT NOTICES

Certificates of Correction for the Week of Oct. 30, 1973

3,482,805	3,719,874	3,733,567	3,738,948
3,531,386	3,719,901	3,733,580	3,739,047
3,537,734	3,719,906	3,733,661	3,739,347
3,617,758	3,720,107	3,733,684	3,739,432
3,620,499	3,721,590	3,733,795	3,739,600
3,620,801	3,721,713	3,733,954	3,739,723
3,626,431	3,722,363	3,733,955	3,739,839
3,635,667	3,722,706	3,734,129	3,739,969
3,643,456	3,723,197	3,734,398	3,740,224
3,644,728	3,723,391	3,734,407	3,740,373
3,647,434	3,723,536	3,734,586	3,740,409
3,658,762	3,723,537	3,734,768	3,740,506
3,665,022	3,723,555	3,734,807	3,740,539
3,671,596	3,725,042	3,734,825	3,740,841
3,684,271	3,725,158	3,734,871	3,741,121
3,686,968	3,725,156	3,734,927	3,741,240
3,687,210	3,725,272	3,734,928	3,741,334
3,688,416	3,725,599	3,734,962	3,741,401
3,691,139	3,726,582	3,735,049	3,741,476
3,691,144	3,726,594	3,735,183	3,741,621
3,692,564	3,726,605	3,735,505	3,741,740
3,694,325	3,726,698	3,735,530	3,741,742
3,694,463	3,726,878	3,735,565	3,741,901
3,696,885	3,728,225	3,735,593	3,741,908
3,700,225	3,728,420	3,735,602	3,741,915
3,700,766	3,729,031	3,735,717	3,741,973
3,703,157	3,729,212	3,736,012	3,741,982
3,703,944	3,729,391	3,736,183	3,741,998
3,704,546	3,729,527	3,736,244	3,742,007
3,705,049	3,729,774	3,736,295	3,742,027
3,705,752	3,729,872	3,736,296	3,742,073
3,706,729	3,729,932	3,736,328	3,742,111
3,706,925	3,730,302	3,736,341	3,742,212
3,709,012	3,730,356	3,736,357	3,742,342
3,709,122	3,730,448	3,736,372	3,742,443
3,709,381	3,730,729	3,736,429	3,742,450
3,709,699	3,730,781	3,736,451	3,742,514
3,710,459	3,730,791	3,736,540	3,742,719
3,710,471	3,730,852	3,736,556	3,742,722
3,711,468	3,730,940	3,736,595	3,742,786
3,711,470	3,730,942	3,736,646	3,742,800
3,711,807	3,731,433	3,736,687	3,742,924
3,712,147	3,731,731	3,736,794	3,742,969
3,712,326	3,731,850	3,736,920	3,743,117
3,712,594	3,731,989	3,737,291	3,743,247
3,712,948	3,732,056	3,737,356	3,743,478
3,713,588	3,732,127	3,737,379	3,743,554
3,713,910	3,732,310	3,737,406	3,743,586
3,714,109	3,732,421	3,737,587	3,743,642
3,714,135	3,732,464	3,737,630	3,743,826
3,715,360	3,732,524	3,737,761	3,743,956
3,715,870	3,732,788	3,738,095	3,743,971
3,715,901	3,732,802	3,738,115	3,744,157
3,716,286	3,733,146	3,738,182	3,744,244
3,716,517	3,733,147	3,738,193	3,744,253
3,716,534	3,733,174	3,738,199	3,744,321
3,716,717	3,733,271	3,738,398	3,744,360
3,716,825	3,733,300	3,738,421	3,744,618
3,717,387	3,733,317	3,738,443	3,744,740
3,717,550	3,733,388	3,738,530	3,744,885
3,718,625	3,733,459	3,738,652	
3,719,834	3,733,472	3,738,865	

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

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Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters; NASA—Code GP–2, Washington, D.C. 20546

Patent application 361,907. A Device for Measuring Tensile Forces. Filed May 21, 1973. PC $3/MF $1.45.

Patent application 363,691. Controlled Separation Combustor. Filed May 24, 1973. PC $3.45/MF $1.45.

Patent application 367,293. A Laser Head for Simultaneous Optical Pumping of Several Dye Lasers. Filed June 5, 1973. PC $3/MF $1.45.

Patent 3,719,891. Contruder Detection System. Filed Mar. 6, 1973. Not available NTIS.

Patent 3,720,075. Ablative System. Filed Mar. 13, 1973. Not available NTIS.

Patent 3,720,208. Underwater Space Suit Pressure Control Regulator. Filed Mar. 3, 1973. Not available NTIS.

Patent 3,723,475. Radiant Source Tracker Independent of Nonconstant Irradtance. Filed Mar. 27, 1973. Not available NTIS.

Patent 3,729,068. Cable Restraint. Filed Apr. 24, 1973. Not available NTIS.

Patent 3,729,129. Numerical Computer Peripheral Interactive Device With Manual Controls. Filed Apr. 24, 1973. Not available NTIS.

Patent 3,729,260. Interferometric Rotation Sensor. Filed Apr. 24, 1973. Not available NTIS.

Patent 3,729,736. Code Regenerative Clean-Up Loon Transponder for a Mu-Type Ranging System. Filed Apr. 24, 1973. Not available NTIS.

Patent 3,731,528. Apparatus and Method for Generating Large Mass Flow of High Temperature Air at Hypersont. Filed May 8, 1973. Not available NTIS.

Patent 3,731,531. Maxometers Peak Wind Speed Anemometers. Filed May 8, 1973. Not available NTIS.

Patent 3,731,405. Apparatus for Statistical Time-Series Analysis of Electrical Signals. Filed May 8, 1973. Not available NTIS.

Patent 3,732,567. Junction Range Finder. Filed May 8, 1973. Not available NTIS.

Patent 3,735,206. Circuit Board Package With Wedge Shaped Covers. Filed May 22, 1973. Not available NTIS.

Patent 3,735,591. Magneto Plasma Dynamic ARC Thruster. Filed May 29, 1973. Not available NTIS.

Patent 3,737,118. Nutation Damper. Filed June 5, 1973. Not available NTIS.

Patent 3,737,781. Signal-to-Noise Ratio Determination Circuit. Filed June 5, 1973. Not available NTIS.

U.S. ATOMIC ENERGY COMMISSION

Assistant General Counsel for Patents, Washington, D.C. 20545

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Patent 3,673,872. Cryogenic Sound Supported Inertial Reference. Filed Feb. 1, 1966. Patented July 4, 1972. Not available NTIS.

Patent 3,692,888. Casting Hydrides. Filed July 2, 1969. Patented Sept. 19, 1972. Not available NTIS.

Patent 3,697,317. Corrosion Inhibition of Copper-Zinc-Alloys. Filed May 19, 1971. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,699,200. High Resistance Electrical Conductor Encapsulation. Filed Mar. 19, 1970. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,701,080. Miniature Coaxial Cable Connector. Filed June 2, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,702,453. Temperature-Compensated Trimming Winding for Water-Cooled Magnet Coils. Filed July 19, 1971. Patented Nov. 7, 1972. Not Available NTIS.

Patent 3,702,620. Actuator System. Filed Aug. 10, 1971. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,702,932. Melting Cryogen Cooling for Radiation Logging Probe. Filed Apr. 15, 1971. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,707,763. Bonding Tungsten With a Fugitive Alloy Binder. Filed July 1, 1971. Patented Jan. 2, 1973. Not available NTIS.

Patent 3,708,391. High Power Density Controlled Fusion Reactor. Filed Sept. 20, 1971. Patented Jan. 2, 1973. Not available NTIS.

Patent 3,708,392. Isotope Enrichment Process for Lanthanide and Actinide Elements. Filed Dec. 22, 1970. Patented Jan. 2, 1973. Not available NTIS.

Patent 3,708,393. Radial Restraint Mechanism for Reactor Core. Filed Dec. 1, 1970. Patented Jan. 2, 1973. Not available NTIS.

Patent 3,708,433. Stabilized Uranium or Uranium-Plutonium Nitride Fuel. Filed Aug. 27, 1970. Patented Jan. 2, 1973. Not available NTIS.

Patent 3,708,451. Method for Composition for Preparing Graphite Products. Filed Sept. 8, 1971. Patented Jan. 2, 1973. Not available NTIS.

Patent 3,708,508. Method for the Purification and Recovery of Tributyl Phosphate Used in Reprocessing Nuclear Fuel. Filed Apr. 9, 1971. Patented Jan. 2, 1973. Not available NTIS.

Patent 3,708,568. Removal of Plutonium From Plutonium Hexafluoride-Uranium Hexafluoride Mixtures. Filed Oct. 20, 1970. Patented Jan. 2, 1973. Not available NTIS.

Patent 3,710,557. Air Sampling Device. Filed Mar. 17, 1972. Patented Jan. 16, 1973. Not available NTIS.

Patent 3,710,933. Multisensor Particle Sorter. Filed Dec. 23, 1971. Patented Jan. 16, 1973. Not available NTIS.

Patent 3,711,591. Reductive Stripping Process for the Recovery of Uranium From Wet Process for the Acid. Filed July 8, 1970. Patented Jan. 16, 1973. Not available NTIS.

Patent 3,711,598. Increased Recovery in Dual Temperature Exchange Process. Filed May 11, 1971. Patented Jan. 16, 1973. Not available NTIS.

Patent 3,711,600. Process for Preparing Calcined Oxides. Filed Dec. 22, 1970. Patented Jan. 16, 1973. Not available NTIS.

Patent 3,711,601. Enriching With Heavy Hydrogen Isotopes. Filed Feb. 12, 1971. Patented Jan. 16, 1973. Not available NTIS.

Patent 3,711,705. Alarm Radiation Dosimeter With Improved Integrating Pulse Ionization Chamber and High Voltage Supply. Filed Nov. 9, 1971. Patented Jan. 16, 1973. Not available NTIS.

Patent 3,712,374. Sequential Nuclear Explosion Fracturing of Geological Formations. Filed Mar. 10, 1971. Patented Jan. 23, 1973. Not available NTIS.

Patent 3,712,983. Digital Radiation Dosimeter With Improved Integrating Pulse Ionization Chamber. Filed Nov. 9, 1971. Patented Jan. 23, 1973. Not available NTIS.

Patent 3,713,860. Bone Substitute. Filed Aug. 31, 1970. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,713,898. Process for Preparing High Transition Temperature Superconductors in the Nb-Al-Ge System. Filed Apr. 26, 1971. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,713,967. Energetic Neutral Particle Injection System for Controlled Fusion Reactor. Filed June 18, 1971. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,713,994. Electrochemical Air Pollution Monitoring Device and Method of Use Thereof. Filed Mar. 16, 1971. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,714,014. Electrochemical Apparatus for Determination of Molten Salt Composition. Filed Feb. 10, 1971. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,714,056. Method for Preparing Stable Urania Plutonia Sols. Filed June 10, 1971. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,714,060. Nuclear Reactor Fuel and Fuel Element and Preparation Thereof. Filed Feb. 12, 1971. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,714,305. Fabrication of Bonded Particle Nuclear Fuel Sticks. Filed Mar. 10, 1971. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,714,322. Method for Preparing High Purity 233 Uranium. Filed June 10, 1970. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,714,702. Method for Diffusion Bonding Refractory Metals and Alloys. Filed Aug. 17, 1971. Patented Feb. 6, 1973. Not available NTIS.

Patent 3,715,204. Separation of Plutonium and Uranium From Holder. Filed May 28, 1971. Patented Feb. 6, 1973. Not available NTIS.

Patent 3,715,296. Electrochemical Carbon Activity Meter. Filed May 6, 1970. Patented Feb. 6, 1973. Not available NTIS.

Patent 3,715,316. Reactor Safety Spray Solution Base-Borate. Filed Jan. 28, 1971. Patented Feb. 6, 1973. Not available NTIS.

Patent 3,715,317. Solvent Extraction Process for Producing Low Nitrate and Large-Crystal-Size PuO2 Sols. Filed June 2,1971. Patented Feb. 6, 1973. Not available NTIS.

Patent 3,715,318. Fluidized Bed Production of Uranium Monocarbide and Uranium Monocarbide-Uranium Aluminide. Filed Jan. 28, 1971. Patented Feb. 6, 1973. Not available NTIS.

Patent 3,715,625. Plasma Generator. Filed Jan. 12, 1971. Patented Feb. 6, 1973. Not available NTIS.

Patent 3,716,409. Cathodes for Secondary Electrochemical Power-Producing Cells. Filed Sept. 8, 1973. Patented Feb. 13, 1973. Not available NTIS.

Patent 3,716,616. Process for Decontamination of Neutron-Irradiated Beryllium. Filed Feb. 24, 1971. Patented Feb. 13, 1973. Not available NTIS.

Patent 3,717,582. Method for Reducing the Oxygen in Certain Actinide Oxides to Less Than Stoichiometric Levels. Filed Apr. 21, 1971. Patented Feb. 20, 1973. Not available NTIS.

Patent 3,717,622. Truxene Polymer and Method for its Preparation. Filed June 10, 1970. Patented Feb. 20, 1973. Not available NTIS.

Patent 3,717,767. Detection System for Heavy and Super-Heavy Cosmic Ray Nuclei. Filed Nov. 2, 1971. Patented Feb. 20, 1973. Not available NTIS.

Patent 3,718,677. Plutonium Dissolution and Plutonium Alkoxide Product. Filed Dec. 29, 1971. Patented Feb. 27, 1973. Not available NTIS.

Patent 3,719,527. Thermal Battery. Filed Jan. 31, 1972. Patented Mar. 6, 1973. Not available NTIS.

Patent 3,719,556. Nuclear Fuel Debris Retention Structure. Filed Dec. 2, 1971. Patented Mar. 6, 1973. Not available NTIS.

Patent 3,719,703. Separation of Sulfonic Acids From Sulfuric Acid. Filed Apr. 29, 1969. Patented Mar. 6, 1973. Not available NTIS.

Patent 3,719,825. Method of Monitoring a Neutron Flux With a Ceramic Neutron Flux Monitor. Filed May 24, 1971. Patented Mar. 6, 1973. Not available NTIS.

Patent 3,720,751. Hydriding Process. Filed June 15, 1967. Patented Mar. 13, 1973. Not available NTIS.

Patent 3,720,752. Massive Metal Hydride Structures and Methods for Their Preparation. Filed Apr. 11, 1967. Patented Mar. 13, 1973. Not available NTIS.

Patent 3,721,970. Alkali Metal Leak Detector. Filed Oct. 6, 1971. Patented Mar. 20, 1973. Not available NTIS.

Patent 3,723,244. Fibrous Fibrin Sheet and Method for Producing Same. Filed Jan. 18, 1971. Patented Mar. 27, 1973. Not available NTIS.

Patent 3,723,246. Plasma Production Apparatus Having Droplet Production Means and Laser Pre-Pulse Means. Filed May 27, 1971. Patented Mar. 27, 1973. Not available NTIS.

Patent 3,723,338. Method for Reducing the Relase of Mobile Contaminants from Granular Solids. Filed Apr. 28, 1971. Patented Mar. 27, 1973. Not available NTIS.

Patent 3,723,727. In-Situ Neutron Activation. Filed June 30, 1971. Patented Mar. 27, 1973. Not available NTIS.

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U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents 18th and C Streets NW., Washington, D.C. 20240

Patent application 342,920. Decomposition of Chalcopyrite. Filed Mar. 19, 1973. PC $3/MF $0.95.

Patent application 354,023. Removal of Mineral Matter Including Pyrite From Coal. Filed June 25, 1973. PC $3/MF $1.45.

Patent application 357,737. Mobile Roof Supporting Shield. Filed June 25, 1973. PC $3/MF $1.45.

Patent application 357,742. Method of Detecting Mine Rock Fractures by Gas Injection. Filed June 25, 1973. PC $3/MF $1.45.

Patent application 359,400. Formation of Metal Filaments by Solid State Reactions. Filed June 25, 1973. PC $3/MF $1.45.

Patent application 369,681. Rigid Testing Machine. Filed June 25, 1973. PC $3/MF $1.45.

Patent application 371,019. Recovery of Lead. Filed June 25, 1973. PC $3/MF $1.45.

Patent application 373,529. Recovery of Metals From Sulfide Materials. Filed June 25, 1973. PC $3/MF $1.45.

Patent application 378,119. Reduction of Copper-Caused Surface Cracking of Steel During Hot Working. Filed July 11, 1973. PC $3/MF $1.45.

Patent 3,743,415. Photomechanical Method. Filed Jan. 21, 1972. Patented July 3, 1973. Not available NTIS.

Patent 3,743,695. Uranium Recovery. Filed Sept. 17, 1970. Patented July 3, 1973. Not available NTIS.

Patent 3,744,219. Multiple Loop Chromatography System. Filed Feb. 29, 1972. Patented July 10, 1973. Not available NTIS.

Patent 3,745,202. Method of Preparing an Asymmetric Membrane From a Cellulose Derivative. Filed Mar. 17, 1971. Patented July 10, 1973. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health; Chief Patent Branch, Westwood Building, Bethesda, Md. 20014

Patent application 246,844. Anticoagulating Blood Suction Device. Filed June 21, 1972. PC $3/MF $0.95.

Patent application 317,702. Human Parathyroid Hormone. Filed Dec. 21, 1972. PC $3/MF $1.45.

Patent application 338,611. Totally Implantable Artificial Replacement Heart. Filed Mar. 6, 1973. PC $5.25/MF $1.45.

Patent application 345,098. Isolation and Purification of Active Principle of Fruit of Synsepalum Dulcificum and Method of Treatment of Obesity. Filed Apr. 24, 1973. PC $3/MF $0.95.

Patent application 355,296. Method of Producing Andrexia as a Treatment for Obesity. Filed Mar. 27, 1973. PC $3/MF $1.45.

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Patent 3,344,570. N2 N4 N6 Tripicrylemelamine. Filed June 8, 1966. Patented Dec. 3, 1968. Not available NTIS.

Patent 3,732,631. Fluidic Heart Sound Synthesizing Techniques and Apparatus. Filed Sept. 16, 1971. Patented May 15, 1973. Not available NTIS.

Patent 3,733,398 Determining and Reversing Anticomplementary Activity in Complement Fixation Test for Austral IA Antigen. Filed July 17, 1970. Patented May 15, 1973. Not available NTIS.

Patent 3,738,979. 02,2'-Cyclocytidine-3-Phosphate and Process for Producing Same. Filed Oct. 23, 1969. Patented June 12, 1973. Not available NTIS.

DEPARTMENT OF THE ARMY

Chief, Patents Division, Office of Judge Advocate, General
Patent Division, Rm. 2C–455, Pentagon,
Washington, D.C. 20310

Patent 3,258,007. Rotary Electrogoniometer for Measuring Degree of Rotation of the Forearm. Filed July 19, 1963. Patented June 28, 1966, Not available NTIS.

Patent 3,306,110. Hydraulic Piston Soil Sampler. Filed Mar. 20, 1964. Patented Feb. 28, 1967. Not available NTIS.

Patent 3,308,603. Tool for Crimping Seals on Containers. Filed Dec. 6, 1963. Patented Mar. 14, 1967. Not available NTIS.

Patent 3,331,109. Safety Hatch for Hooks. Filed June 2, 1966. Patented July 18, 1967. Not available NTIS.

Patent 3,399,401. Digital Computer and Graphic Input System. Filed June 29, 1964. Patented Aug. 27, 1968. Not available NTIS.

Patent 3,423,765. Prosthetic Device With Electronic Proportional Control Grasp. Filed Aug. 11, 1966, Patented Jan. 28, 1969. Not available NTIS.

Patent 3,494,182. Soil Shearing Machine. Filed Jan. 29, 1968. Patented Feb. 10, 1970. Not available NTIS.

Patent 3,534,455. Method of Making Thermionic Cathodes. Filed May 3, 1968. Patented Oct. 20, 1970. Not available NTIS.

Patent 3,534,471. Method of Making a Computer Memory Stack. Filed June 9, 1967. Patented Oct. 20, 1970. Not available NTIS.

Patent 3,534,506. Lens Polishing Apparatus. Filed May 17, 1968. Patented Oct. 20, 1970. Not available NTIS.

Patent 3,535,387. Oxidatively Stable Alkylbiphenyls and Terphenyls as Non-Spreading Lubricants. Filed Sept. 23, 1968. Patented Oct. 20, 1970. Not available NTIS.

Patent 3,539,396. Rechargeable Alkaline Zinc System. Filed Nov. 5, 1968. Patented Nov. 10, 1970. Not available NTIS.

Patent 3,539,430. Method of Constructing a Radio-Frequency Feed-Through Assembly. Filed Jan. 24, 1968. Patented Nov. 10, 1970. Not available NTIS.

Patent 3,539,837. Solid-State Horizontal Sweep Driving Circuit. Filed July 29, 1968. Patented Nov. 10, 1970. Not available NTIS.

Patent 3,541,195. Method for Molding Insulation Materials. Filed Nov. 27, 1968. Patented Nov. 17, 1970. Not available NTIS.

Patent 3,541,566. Foldable Antenna Structure. Filed Dec. 5, 1967. Patented Nov. 17, 1970. Not available NTIS.

Patent 3,548,285. High Efficiency Current Driver. Filed Mar. 29, 1968. Patented Dec. 15, 1970. Not available NTIS.

Patent 3,548,419. Electrically Driven Prosthetic Elbow. Filed Dec. 10, 1968. Patented Dec. 22, 1970. Not available NTIS.

Patent 3,549,236. Optical Frequency Discriminator With Dual Frequency Resonator. Filed Sept. 30, 1968. Patented Dec. 22, 1970. Not available NTIS.

Patent 3,549,694. Alpha-Amino-P-Toluenesulfonamide Citrate. Filed May 15, 1968. Patented Dec. 22, 1970. Not available NTIS.

Patent 3,550,213. High Strength Hot-Press Die. Filed Dec. 31, 1968. Patented Dec. 29, 1970. Not available NTIS.

Patent 3,551,720. Seal for High Pressure Short-ARC Lamp. Filed Jan. 28, 1969. Patented Dec. 29, 1970. Not available NTIS.

Patent 3,552,413. Feedback Divider for Fluid Amplifier. Filed June 12, 1964. Patented Jan. 5, 1971. Not available NTIS.

Patent 3,554,877. Method of Making Printed Circuit Assemblies. Filed Feb. 7, 1968. Patented Jan. 12, 1971. Not available NTIS.

Patent 3,554,913. Friction Reduction by Copolymer of N-Alkyl Methacrylates and Methacrylic Acid in Solution. Filed Aug. 15, 1969. Patented Jan. 12, 1971. Not available NTIS.

Patent 3,555,340. Button Short-ARC Gas Lamp. Filed Jan. 7, 1969. Patented Jan. 12, 1971. Not available NTIS.

Patent 3,558,005. Aerial Chemical Dispenser. Filed Nov. 6, 1968. Patented Jan. 26, 1971. Not available NTIS.

Patent 3,562,537. Electron-Optical De-Correlation of Wavefront Distortion Due to Atmospheric Scintillation. Filed Sept. 3, 1969. Patented Feb. 9, 1971. Not available NTIS.

Patent 3,562,637. Low Voltage DC Control of Voltage-Variable Capacitors. Filed July 7, 1969. Patented Feb. 9, 1971. Not available NTIS.

Patent 3,566,286. System for Determining the Gain Compression of an R.F. Amplifier. Filed Apr. 21, 1969. Patented Feb. 23, 1971. Not available NTIS.

Patent 3,566,693. Fluidic Altitude Sensor. Filed Oct. 3, 1969. Patented Mar. 2, 1971. Not available NTIS.

Patent 3,566,898. Flueric Vortex Proportional Amplifier. Filed Dec. 20, 1968. Patented Mar. 2, 1971. Not available NTIS.

Patent 3,567,969. High Power Modulator. Filed Aug. 6, 1968. Patented Mar. 2, 1971. Not available NTIS.

Patent 3,567,292. Sprocket Engagement Support Wheel for an Endless Track. Filed Feb. 19, 1969. Patented Mar. 2, 1971. Not available NTIS.

Patent 3,569,735. Constant Amplitude Sawtooth Generator. Filed Sept. 24, 1968. Patented Mar. 9, 1971. Not available NTIS.

Patent 3,569,795. Voltage-Variable, Ferroelectric Capacitor. Filed May 29, 1969. Patented Mar. 9, 1971. Not available NTIS.

Patent 3,570,558. Tying Mechanism. Filed Aug. 30, 1968. Patented Mar. 16, 1971. Not available NTIS.

Patent 3,573,067. Process for Radiation Sterilizing a Packaged Precooked Meat and Gravy Product. Filed Oct. 8, 1968. Patented Mar. 30, 1971. Not available NTIS.

Patent 3,573,314. Substituted-8-Quinolinols. Filed Aug. 17, 1967. Patented Mar. 30, 1971. Not available NTIS.

Patent 3,573,333. Lubricant Additives for Oxidation Inhibition and Rust Inhibition. Filed Aug. 19, 1969. Patented Mar. 30, 1971. Not available NTIS.

Patent 3,573,427. Electrically Conductive Asphaltic Concrete. Filed July 30, 1969. Patented Apr. 6, 1971. Not available NTIS.

Patent 3,575,828. Method of Insolubilizing Gelatin. Filed Mar. 1, 1968. Patented Apr. 20, 1971. Not available NTIS.

Patent 3,577,093. Means for Obtaining Multiple Coherent-Laser Apertures. Filed Sept. 13, 1968. Patented May 4, 1971. Not available NTIS.

Patent 3,577,697. High-Pressure Gas-Filling Apparatus and Method. Filed July 1, 1969. Patented May 4, 1971. Not available NTIS.

Patent 3,578,056. Run-Flat Combat Tire. Filed May 20, 1969. Patented May 11, 1971. Not available NTIS.

Patent 3,578,415. Dry Hydrogen Generator. Filed Oct. 13, 1969. Patented May 11, 1971. Not available NTIS.

Patent 3,578,439. Amalgamation Process. Filed July 2, 1968. Patented May 11, 1971. Not available NTIS.

Patent 3,584,536. Multiple Area Hydraulic Actuator. Filed Jan. 13, 1971. Patented June 15, 1971. Not available NTIS.

Patent 3,585,389. Simple Solid-Electrolyte Gamma-Ray and Relativistic-Charged Particle Dosimeter. Filed Dec. 1, 1969. Patented June 15, 1971. Not available NTIS.

Patent 3,585,503. Binary PSK Transmission Using Two Closely Related Frequencies to Eliminate Phase Discontinuity. Filed Oct. 31, 1969. Patented June 15, 1971. Not available NTIS.

Patent 3,585,548. Teletypewriter Selector Magnet. Filed Feb. 27, 1970. Patented June 15, 1971. Not available NTIS.

Patent 3,585,553. Microminiature Leadless Inductance Element. Filed Apr. 16, 1970. Patented June 15, 1971. Not available NTIS.

Patent 3,587,563. Heartbeat Monitor. Filed Jan. 8, 1969. Patented June 28, 1971. Not available NTIS.

Patent 3,588,538. Electronic Switch. Filed Jan. 26, 1968. Patented June 28, 1971. Not available NTIS.

Patent 3,589,359. Unidirectional Fiberglass Composite Drop-Foot Brace. Filed July 24, 1968. Patented June 29, 1971. Not available NTIS.

Patent 3,592,658. Process for Preparing Sterilized Comminuted Beef Products. Filed Aug. 1, 1968. Patented July 13, 1971. Not available NTIS.

Patent 3,592,683. Flame Resistant Materials and Method of Making Same. Filed Sept. 25, 1969. Patented July 13, 1971. Not available NTIS.

Patent 3,593,770. Position Locking Device for a Nut. Filed Aug. 12, 1969. Patented July 20, 1971. Not available NTIS.

Patent 3,597,444. Method of Synthesizing Selenoureas From Thioureas. Filed Apr. 2, 1969. Patented Aug. 3, 1971. Not available NTIS.

Patent 3,598,395. Educational Testing Apparatus. Filed Oct. 24, 1968. Patented Aug. 10, 1971. Not available NTIS.

Patent 3,598,998. Single Crystal Infrared Image Converter. Filed Sept. 24, 1968. Patented Aug. 10, 1971. Not available NTIS.

Patent 3,599,117. Method of Apparatus for Tracking an Invisible Gas Laser Beam. Filed May 18, 1970. Patented Aug. 10, 1971. Not available NTIS.

Patent 3,599,189. Display Memory. Filed Oct. 14, 1969. Patented Aug. 10, 1971. Not available NTIS.

Patent 3,599,207. Combined Frequency Modulated Radar and Radiometer. Filed Oct. 16, 1969. Patented Aug. 10, 1971. Not available NTIS.

Patent 3,634,097. Method of Extracting and Concentrating Flavor Precursors of Meats. Filed Dec. 11, 1969. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,642,237. Spiral Reefed Ariable Drag Parachute. Filed May 14, 1970. Patented Feb. 15, 1972. Not available NTIS.

Patent 3,642,500. Process for Stabilizing Structure of Ground Meat. Filed July 17, 1969. Patented Feb. 15, 1972. Not available NTIS.

Patent 3,664,956. Grease Compositions. Filed Sept. 26, 1969. Patented May 23, 1972. Not available NTIS.

[FR Doc. 73-20801; Filed 10-2-73; 8:45 am]

Disclaimer and Dedication

3,133,891.—*Louis Ceyzeriat*, Lyon, France. ROOM TEMPERATURE CURABLE SILOXANE COMPOSITIONS. Patent dated May 19, 1964. Disclaimer and dedication filed May 31, 1973, by the assignee, *Rhone-Poulenc S.A.*

Hereby disclaims and dedicates to the Public claims 4, 5, 6, 8, 9, 10, 14, 15, 16, 18, 19 and 20 of said patent.

Dedications

3,111,464.—*William H. Safranek, Jr.*, Worthington, and *John G. Beach* and *Charles L. Faust*, Columbus, Ohio. ELECTRODEPOSITION OF CHROMIUM AND CHROMIUM ALLOYS. Patent dated Nov. 19, 1963. Dedication filed May 7, 1973, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,130,138.—*Charles L. Faust* and *John E. Clifford*, Columbus, Ohio. ELECTROLYTIC CUTTING. Patent dated Apr. 21, 1964. Dedication filed May 7, 1973, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,220,103.—*Charles C. Simons*, Columbus, Ohio. METHOD OF EXPLOSIVELY COMPACTING POWDERS TO FORM A DENSE BODY. Patent dated Nov. 30, 1965. Dedication filed May 7, 1973, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,246,225.—*Robert K. Willardson*, Arcadia, Calif., and *Albert C. Beer*, Columbus, Ohio. POWER SUPPLY CIRCUITS. Patent dated Apr. 12, 1966. Dedication filed May 7, 1973, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,270,310.—*Lyle K. Matson, Francis J. Reid* and *James F. Miller*, Columbus, Ohio. RESISTANCE DEVICES. Patent dated Aug. 30, 1966. Dedication filed May 7, 1973, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,293,028.—*Arthur R. Elsea, Frank J. Barone* and *William R. Warke*, Columbus, Ohio. HIGH STRENGTH STEELS. Patent dated Dec. 20, 1966. Dedication filed May 7, 1973, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,419,951.—*Ronald J. Carlson*, Galloway, Ohio. FABRICATION OF METAL STRUCTURES. Patent dated Jan. 7, 1969. Dedication filed May 7, 1973, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,491,603.—*Jeremy M. Harris*, Worthington, Ohio. MECHANICAL AMPLIFIER. Patent dated Jan. 27, 1970. Dedication filed May 7, 1973, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,600,085.—*Donald R. Altergott*, Highland Park, Ill. COUNTER FOR PHOTOCOPY MACHINE. Patent dated Aug. 17, 1971. Dedication filed July 27, 1973, by the assignee, *American Photocopy Equipment Company.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimers

3,124,576.—*Robert John Stedman*, Melrose Park, Pa. INTERMEDIATES FOR THE PREPARATION OF ANTIMICROBIAL AGENTS AND PROCESSES FOR THEIR PREPARATION. Patent dated Mar. 10, 1964. Disclaimer filed June 15, 1973, by the assignee, *Smith Kline & French Laboratories.*

Hereby enters this disclaimer to claims 1, 2, and 6 of said patent.

3,206,688.—*Michael J. DiToro*, Massapequa, N.Y. APPARATUS FOR CORRECTING DISTORTION IN WAVE-SIGNAL TRANSLATING CHANNELS. Patent dated Sept. 14, 1965. Disclaimer filed May 18, 1973, by the assignee, *General Signal Corporation.*

Hereby enters this disclaimer to claim 11 of said patent.

3,263,079.—*Lawrence N. Mertz*, Cambridge, and *Niels O. Young*, South Lincoln, Mass. METHOD FOR FORMING AN IMAGE OF AN INVISIBLE RADIATION PATTERN AND APPARATUS FOR COPYING THE IMAGE. Patent dated July 26, 1966. Disclaimer filed June 13, 1973, by the assignee, *Block Engineering, Inc.*

Hereby enters this disclaimer to claims 1 through 8, inclusive, claims 11 through 13, inclusive, and claim 15 of said patent.

3,481,611.—*Philip G. Stratton*, Northville, Mich. OUTER SIDE SEALING OIL CONTROL RING. Patent dated Dec. 2, 1969. Disclaimer filed May 30, 1973, by the assignee, *Ramsey Corporation.*

Hereby enters this disclaimer to claims 1 and 4 of said patent.

3,599,643.—*Marcus Schwartz*, Forest Hills, N.Y. BRASSIERE FRAME. Patent dated Aug. 17, 1971. Disclaimer filed June 25, 1973, by the assignee, *S. & S. Industries, Inc.*

Hereby enters this disclaimer to claim 1 of said patent.

3,614,269.—*Robert S. Lanctot*, Long Meadow, Mass. INTEGRATED PUMP-CONTROL SYSTEM USING A UNITIZED PUMP. Patent dated Oct. 19, 1971. Disclaimer filed May 21, 1973, by the assignee, *Chandler Evans Inc.*

Hereby enters this disclaimer to claim 1 of said patent.

3,619,673.—*Clifford J. Helms,* Calabasas Park, Calif. MOVING COIL LINEAR MOTOR. Patent dated Nov. 9, 1971. Disclaimer filed Mar. 12, 1971, by the assignee, *Data Products Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Apr. 7, 1987.

3,637,146.—*Charles T. Banks,* Neenah, Wis. HAMMERMILL CONSTRUCTION. Patent dated Jan. 25, 1972. Disclaimer filed Aug. 13, 1973, by the assignee, *Kimberly-Clark Corporation.*

Hereby enters this disclaimer to claims 1, 2, 3, 4 and 5 of said patent.

3,711,385.—*Henri Bernard Beer,* Kalmthout, Belgium. ELECTRODE HAVING PLATINUM METAL OXIDE COATING THEREON, AND METHOD OF USE THEREOF. Patent dated Jan. 16, 1973. Disclaimer filed Nov. 6, 1972, by the assignee, *Chemnor Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Jan. 4, 1989.

3,736,316.—*Silvano Rossi,* Milan, Italy. 1,2,5-BENZOTRIAZEPIN-4-ANES AND THEIR PREPARATION. Patent dated May 29, 1973. Disclaimer filed Sept. 8, 1972, by the assignee, *Roussel UCLAF.*

Hereby disclaims the portion of the term of the patent subsequent to Oct. 17, 1989.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 13, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-17-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-09-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Acting Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-17-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-07-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-18-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	3-07-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	12-07-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-01-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food: Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	8-15-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices, Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-30-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	1-12-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. BUCHLER, Acting Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-04-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-02-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-07-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	10-13-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-20-72

Expiration of patents: The patents within the range of numbers indicated below expire during October 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,764,758 to 2,769,171, inclusive
Plant Patents..... Numbers 1,522 to 1,525, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED OCTOBER 30, 1973

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T915,009

CONJUCTIVE POLYMERS

Michael Fryd, Broomall, Pa., and David K. Wald, Cherry Hill, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of abandoned application Ser. No. 867,688, Oct. 20, 1969. This application May 19, 1972, Ser. No. 255,135

Int. Cl. C08f *15/40*
U.S. Cl. 260—875

1 Sheet Drawing. 13 Pages Specification

Conjunctive polymers having

(a) two or more base portions each of which, as an entity before oxidation, is a copolymer of one or more ethylenically unsaturated monomers and one or more unsaturated aldehyde monomers, and

(b) one or more conjunct portions each of which, as an entity, is an acrylate or methacrylate polymer, a vinyl ester polymer or a vinyl halide polymer,

and coating compositions containing these conjunctive polymers.

T915,010

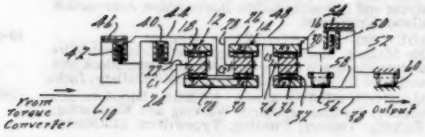
FOUR-SPEED AUTOMATIC TRANSMISSION MECHANISM HAVING THREE SIMPLE PLANETARY GEAR UNITS

Larry A. Kepner, 22614 Alexandrine, Dearborn, Mich. 48124, and Po-Lung Liang, 36531 Sunnydale, Livonia, Mich. 48154

Continuation-in-part of abandoned application Ser. No. 111,997, Feb. 2, 1971. This application June 5, 1972, Ser. No. 259,749

Int. Cl. F16h *57/10*
U.S. Cl. 74—763

2 Sheets Drawing. 7 Pages Specification



A four-speed ratio power transmission mechanism for use in an automotive vehicle driveline comprising three simple planetary gear units, each gear unit having a ring gear, a sun gear and a planetary carrier, the sun gear of the first and second gear units being common, the ring gear of the second and third gear units being common and five friction torque establishing devices for controlling the relative motion of the elements of the gear units thereby providing four forward driving speed ratios and a single reverse speed ratio wherein the ratio change between the two highest ratios is of a reduced magnitude and the torque ratios available during operation in the low speed range and in reverse are relatively high.

T915,011

FLUOROELASTOMER COMPOSITION

James Ray Hoover, Wilmington, and James Daniel MacLachlan, Hockessin, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 30, 1972, Ser. No. 268,023

Int. Cl. C08g *45/04*
U.S. Cl. 260—836

No Drawing. 16 Pages Specification

A curable fluoroelastomer composition having improved resistance to shrinkage during molding, which cures to a composition having other desirable properties such as good tear strength and elongation can be made by mixing the following: (A) an elastomeric copolymer of vinylidene fluoride and at least one other fluorinated monomer, (B) a polyhydroxylic aromatic compound cross-linking agent for said copolymer, (C) a suitable vulcanization accelerator, such as a quaternary phosphonium or ammonium compound, (D) a suitable metal compound such as a divalent metal oxide or hydroxide, and (E) a polyepoxide having a functionality of at least two. Particularly useful compositions of this type can be made from copolymers of vinylidene fluoride and hexafluoropropylene (polymerized in a molar ratio of 85:15 to 50:50) and, per 100 parts of copolymer, 0.1–5 parts of hexafluoroisopropylidene-bis(4 - hydroxybenzene), 0.1–3 parts of benzyltriphenylphosphonium chloride, 1–20 parts of magnesium oxide or a mixture of magnesium and calcium oxides, and 0.5–10 parts of difunctional epoxy resin made from epichlorohydrin and bisphenol A. Curing is accomplished by heating for 3–30 minutes at about 149–204° C. and optionally postcuring for 1–48 hours at about 204–260° C.

T915,012

COMPUTER OUTPUT DISPLAY

Francis Michael Hartmann, Hurley, Richard Alfred Jones, Redhook, Theodore Edwin Larson, Saugerties, Kenneth Rogers McNary, Hyde Park, and James Theodore Zahorsky, Saugerties, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

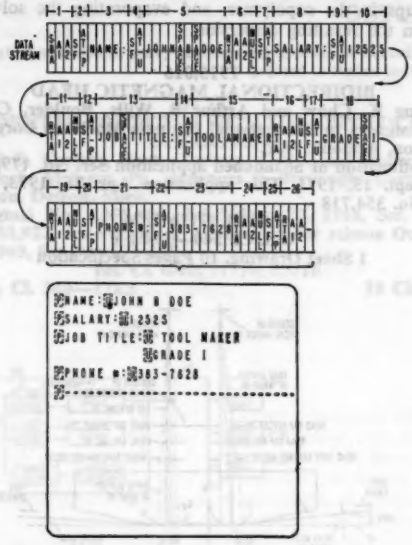
Filed Nov. 13, 1972, Ser. No. 305,761

Int. Cl. G06f *3/14*
U.S. Cl. 340—324 AD

8 Sheets Drawing. 21 Pages Specification

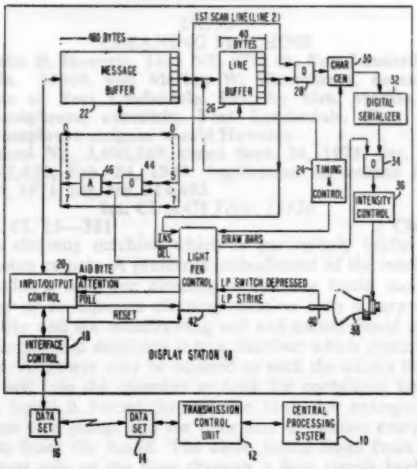
An output display terminal which includes an addressable message buffer for storing characters to be displayed on the screen of the terminal. The terminal responds to a data stream which includes a repeat to address [RTA] buffer control order, a stop address [A1, A2] and a specified alphameric or null character. In executing the order, the specified character is stored in all buffer locations starting at the current buffer address and ending at

but not including the specified stop address. With this single order, a specified character may be displayed in



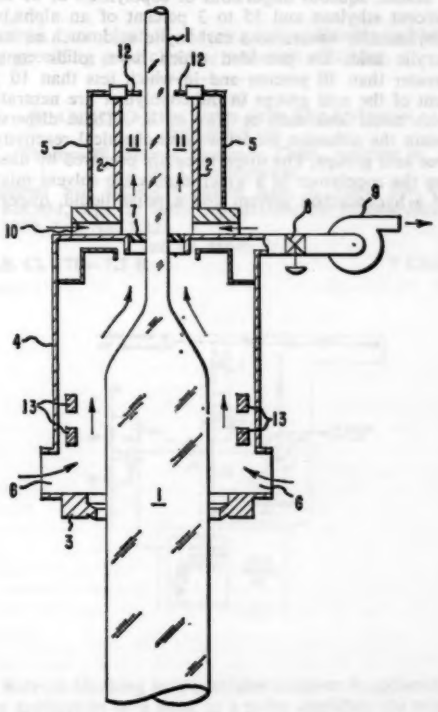
successive display positions or a succession of nulls, blanks or spaces may be inserted following the last significant character of a display field.

T915,013
SELECTOR LIGHT PEN SYSTEM
Richard Alfred Jones, Redhook, Theodore Edwin Larson, Saugerties, Kenneth Rogers McNary, Hyde Park, Lawrence Gedney Mosher, Rhinebeck, William Roosevelt Vincent, Poughkeepsie, and James Theodore Zahorsky, Saugerties, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 17, 1972, Ser. No. 307,759
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 AD
5 Sheets Drawing. 29 Pages Specification



Light pen detection and verification arrangement for a display system allowing operator selection of one or more portions of a formatted message. Format is established by including a non-displayable field separator character followed by a designator character and one or more displayable alphameric characters. The field separator character includes bits which identify the field as being detectable and a tag bit to indicate when detection has been made in the associated field. When a field preceded by a ? is detected, the tag bit of the field separator character is set on and the ? is changed to a > providing a visual verification of the selection. If the original selection is to be changed, the original field is again selected, the tag bit is reset off and the > is returned to a ? to provide visual verification of the deselection. A field which is preceded by a space or null designator character if selected will cause the tag bit of the associated field separator character to be set on with no change occurring in the designator character representation but a signal is generated which will lead to a reading of the tagged fields of the system message.

T915,014
TUBULAR THERMOPLASTIC FILM TEMPERATURE CONTROL
Max Goldman, Latham, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation of abandoned application Ser. No. 197,217, Nov. 10, 1971. This application Dec. 22, 1972, Ser. No. 317,805
Int. Cl. B29c *17/02*
U.S. Cl. 264—95
1 Sheet Drawing. 6 Pages Specification



A process and apparatus for cooling thermoplastic film material (e.g., polypropylene or polyethylene film) which is downwardly extruded in the form of a tube, by passing air countercurrently to the direction of travel of the extruded tube, in two, segregated temperature control zones. The extruded tube is quenched, preheated to near

its orientation temperature, heated and expanded to orient, and then quenched at the point of its maximum expansion. The improvement consists in passing countercurrent to the direction of tube movement a stream of air upward and adjacent to the tube within an enclosure that surrounds the tube. The air flow is from a point of maximum radical expansion of the tube and prior to quenching, to a point at which the tube is preheated and at its unexpanded diameter. The air is exhausted at a controlled rate at the upper end of the enclosure. A second stream of air is passed upwardly and adjacent to the tube within a second enclosure that surrounds the tube along that portion of the tube being preheated. This stream of air is also exhausted at a controlled rate at the upper end of the enclosure. The two streams of air both enter the enclosures at temperatures less than that of the tube at the point of entry.

T915,015
AQUEOUS DISPERSIONS OF ETHYLENE COPOLYMERS AND PROCESSES FOR THEIR PREPARATION

Thomas Charles Bissot, Deer Run Road, R.D. 3, Newark, Del. 19711, and Vernon Clare Wolff, Jr., 1400 Ivy Drive, Webster Farms, Wilmington, Del. 19803

Continuation-in-part of application Ser. No. 164,477, July 20, 1971, which is a continuation-in-part of application Ser. No. 805,381, Mar. 7, 1969, both now abandoned. This application Mar. 22, 1973, Ser. No. 343,685

Int. Cl. C08f *27/00, 45/44, 47/20*

U.S. Cl. 260—29.6 TA

No Drawing. 15 Pages Specification

Stable, aqueous dispersions of copolymers of 65 to 97 percent ethylene and 35 to 3 percent of an alpha,beta-ethylenically unsaturated carboxylic acid, such as methacrylic acid, are provided which have solids contents greater than 50 percent and in which less than 10 percent of the acid groups in the copolymer are neutralized with metal ions such as Na^+ or K^+. These dispersions retain the adhesion properties and chemical reactivity of free acid groups. The dispersions are prepared by dissolving the copolymer in a water-immiscible solvent mixture of a hydrocarbon solvent and a polar liquid, dispersing the solution in water which contains ammonia or a volatile organic amine and an alkali metal hydroxide in an amount to neutralize less than 10 percent of the acid groups in the copolymer, and evaporating the solvents from the resulting dispersion.

T915,016
BIDIRECTIONAL MAGNETIC HEAD

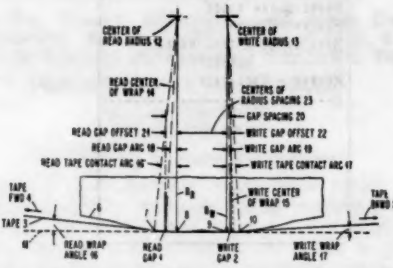
Tseng K. Chow and Arthur B. Wills, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of abandoned application Ser. No. 179,866, Sept. 13, 1971. This application Apr. 26, 1973, Ser. No. 354,718

Int. Cl. G11b *5/26*

U.S. Cl. 340—174.1 F

1 Sheet Drawing. 10 Pages Specification


CENTER OF READ RADIUS 12
CENTER OF WRITE RADIUS 13
READ CENTER OF WRAP 14
CENTERS OF RADIUS SPACING 23
GAP SPACING 20
READ GAP OFFSET 21
WRITE GAP OFFSET 22
READ GAP ARC 18
WRITE GAP ARC 19
READ TAPE CONTACT ARC 16
WRITE TAPE CONTACT ARC 17
TAPE FWD 4
WRITE CENTER OF WRAP 15
TAPE REWD 5
TAPE 3
READ WRAP ANGLE 16
READ GAP 1
WRITE GAP 2
WRITE WRAP ANGLE 17

A magnetic head surface contour is defined by two constant radii. The two pairs of points at which a magnetic tape is tangent to the two contours locate two centers-of-wrap at the midpoints of tangency. The tape path is controlled to give two different tape wrap angles relative to the horizontal. A read gap, used during both forward and backward tape motion is located at but not precisely on, one of the centers-of-wrap. A write gap, used during write operations, is located downstream (during forward tape motion) from the other center-of-wrap.

REISSUES

OCTOBER 30, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

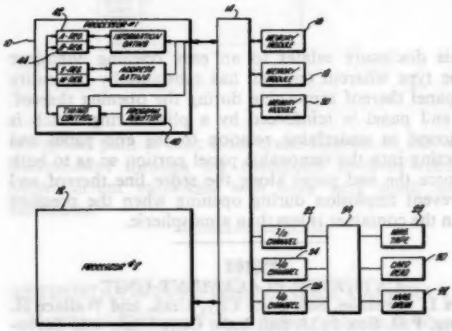
27,791
DIGITAL COMPUTER WITH MEMORY LOCK OPERATION

Carl B. Carlson, Santa Barbara, Calif., and Robert V. Bock, Malvern, Pa., assignors to Burroughs Corporation, Detroit, Mich.

Original No. 3,398,405, dated Aug. 20, 1968, Ser. No. 461,923, June 7, 1965. Application for reissue Oct. 8, 1969, Ser. No. 871,491

Int. Cl. G06f *11/10, 15/16*

U.S. Cl. 340—172.5 19 Claims



There is described a computer system in which a specific command in a processor sets a flag bit in a word in memory at the time the processor reads this word out of memory. The flag bit then indicates, whenever that particular word is accessed in memory, that the word is "locked" and may be used to prevent use of the word until the flag bit is reset.

27,792
CLEANING MACHINE

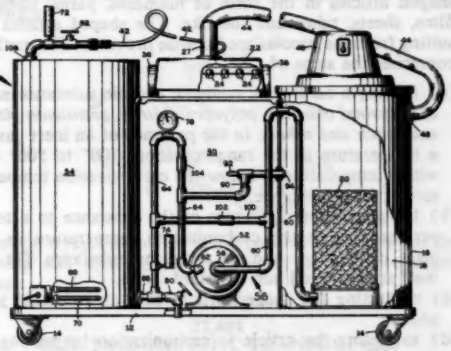
Charles R. Howerin, 1631 NE. 57th St., Fort Lauderdale, Fla. 33308, and Marion W. Humphreys, deceased, late of Fort Lauderdale, Fla., by Mrs. Marion W. Humphreys, executrix, Fort Lauderdale, Fla.; said Humphreys assignor to said Howerin

Original No. 3,605,169, dated Sept. 20, 1971, Ser. No. 801,432, Feb. 24, 1969. Application for reissue Dec. 30, 1971, Ser. No. 214,493

Int. Cl. A47l *7/00, 13/26*

U.S. Cl. 15—321 3 Claims

A cleaning machine which is particularly useful for cleaning carpets. A preferred embodiment of the machine includes a head for directing a cleaning liquid such as water or an aqueous cleaning solution onto a carpet or the like and for withdrawing soil and excess liquid from the carpet and supplying it to a chamber which contains a filter. A blower may be utilized to suck the excess liquid and soil into the chamber or tank for containing liquid. The liquid is forced through the filter, for example by means of a pump, and the filter acts to remove contaminants from the liquid. The clean liquid flows from the exhaust side of the filter through a flow circuit back to the head where it is directed against the carpet, for example as a spray. A heater is provided to raise the temperature of the liquid so that it is very hot when sprayed, thereby improving its cleaning action. Thus, the machine



involves a combination of recirculation, filtering and heating providing good cleaning and high efficiency.

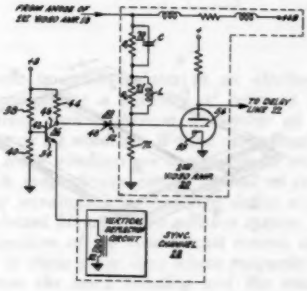
27,793
BLANKING CIRCUITS FOR TELEVISION RECEIVERS

Thomas W. Burrus, Torrance, Calif., assignor to RCA Corporation

Original No. 3,436,475, dated Apr. 1, 1969, Ser. No. 445,451, Apr. 5, 1965. Application for reissue Jan. 7, 1970, Ser. No. 1,221

Int. Cl. H04n *3/24*

U.S. Cl. 178—7.5 R 7 Claims



Retrace blanking in a television receiver is achieved by the application of a pulse to a pulse amplifier, the output of which is coupled to the input of a video amplifier stage. The pulse amplifier is suitably biased relative to the magnitude and rate of decay of the applied pulse such that the pulse output therefrom is predetermined to coincide with and have a time duration substantially equal to the retrace interval.

27,794

HEAT TREATMENT OF MOLTEN CARBONACEOUS MATERIAL PRIOR TO ITS CONVERSION TO CARBON FIBERS AND OTHER SHAPES

Sugio Otani, Hishi-machi, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

No Drawing. Original No. 3,392,216, dated July 9, 1968, Ser. No. 406,603, Oct. 26, 1964. Application for reissue July 7, 1970, Ser. No. 52,817

Claims priority, application Japan, Nov. 1, 1963, 38/58,942; Sept. 1, 1964, 39/49,772

Int. Cl. C01b *31/07;* D06m *11/04, 11/12*

U.S. Cl. 264—29 8 Claims

A method is provided for the production of carbon shaped articles in the form of filaments, yarns, ribbons, films, sheets, tubes and the like. The shaped articles resulting from the process are likewise provided. The method comprises the steps of

(a) heating a natural or synthetic organic substance *such as polyvinyl chloride, polyacrylonitrile, petroleum pitch, coal pitch and others,* in the presence of an inert gas to a temperature in the range of about 300° to 500° C., which temperature is below the carbonization temperature of such substance,

(b) bringing the temperature of the substance to a temperature below the carbonization temperature *in an inert atmosphere* and forming the substance [in an inert atmosphere] into a desired shape,

(c) contacting the shaped article with an oxidizing gas, and

(d) subjecting the article to carbonization by heating in an inert atmosphere at a temperature substantially above 500° C.

The shaped articles are useful for a wide range of uses, as for example, thermal insulation materials, carbon electrodes, and the like.

27,795

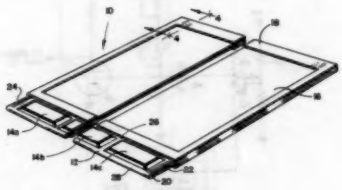
AIR VENTING MEANS FOR PHOTOGRAPHIC FILM UNIT

Richard J. Chen, Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Original No. 3,589,904, dated June 29, 1971, Ser. No. 851,290, Aug. 19, 1969. Application for reissue Nov. 1, 1971, Ser. No. 194,721

Int. Cl. G03b *17/50*

U.S. Cl. 95—13 9 Claims



A self-developing photographic film unit adapted to be processed by being moved between two pressure-applying rollers. A transparent sheet is held in face-to-face contact with the photosensitive sheet with a liquid processing composition being fed between the sheets and arranged so that excess processing liquid is collected after the photosensitive sheet has been covered and any air trapped with the processing liquid is allowed to escape. The escape means provided is an unsealed portion of a fold in the binding material that holds the sheets together.

27,796

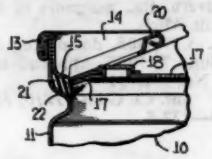
SCORE SHIELD AND ANTI-IMPLOSION RING

Frederick J. Stec, Oak Lawn, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Original No. 3,447,713, dated June 3, 1969, Ser. No. 680,472, Nov. 3, 1967. Application for reissue Jan. 18, 1971, Ser. No. 107,601

Int. Cl. B65d *17/20*

U.S. Cl. 220—54 13 Claims



This disclosure relates to an easy opening container of the type wherein one end has substantially the entire end panel thereof removable during the opening thereof. The end panel is reinforced by a pliable ring which is positioned in underlying relation to the end panel and projecting into the removable panel portion so as to both reinforce the end panel along the score line thereof and to prevent implosion during opening when the pressure within the container is less than atmospheric.

27,797

CATHETER PLACEMENT UNIT

James L. Sorenson, Salt Lake City, Utah, and Wallace H. Ring, P.O. Box 1133, Salt Lake City, Utah; said Sorenson assignor to said Wallace H. Ring

Original No. 3,463,152, dated Aug. 26, 1969, Ser. No. 556,194, June 8, 1966. Application for reissue Dec. 14, 1970, Ser. No. 97,627

Int. Cl. A61m *5/00*

U.S. Cl. 128—214.4 13 Claims

The combination of the catheter placement unit including a needle and a catheter telescopically associated therewith, and wherein the needle is retractable relatively to the catheter following puncture of a body lumen, and locking means to hold the needle in retracted position in such manner that the patient's body is effectively protected from contact of the needle point.

27,798

ELECTRICAL COMMUNICATION SWITCHING NETWORK

Rein Raymond Laane, Wheaton, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

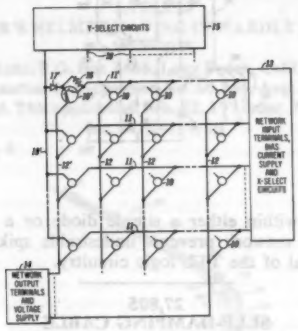
Original No. 3,655,920, dated Apr. 11, 1972, Ser. No. 89,599, Nov. 16, 1970. Application for reissue Sept. 1, 1972, Ser. No. 285,824

Int. Cl. H04q *3/50*

U.S. Cl. 179—18 GF 21 Claims

A communication switching network having semiconductor crosspoint elements defining unbalanced transmis-

sion paths therethrough wherein the effects of loss variations and crosstalk are substantially reduced by deliberately mismatching the impedances at opposite ends of each


Y-SELECT CIRCUITS
NETWORK INPUT TERMINALS, BIAS CURRENT SUPPLY AND X-SELECT CIRCUITS
NETWORK OUTPUT TERMINALS AND VOLTAGE SUPPLY

crosspoint path as seen from the crosspoint so that signal transmission through the crosspoint involves relatively large current variations with only very small voltage variations.

27,799

RETROFOCUS-TYPE WIDE-ANGLE CAMERA LENS

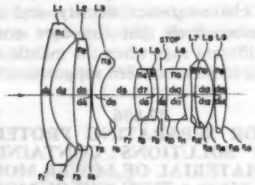
Yoshiyuki Shimizu, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Original No. 3,622,227, dated Nov. 23, 1971, Ser. No. 888,041, Dec. 24, 1969, which is a continuation-in-part of Ser. No. 611,206, Dec. 27, 1966, now abandoned. Application for reissue Sept. 13, 1972, Ser. No. 288,502

Claims priority, application Japan, Dec. 28, 1965, 41/80,685

Int. Cl. G02b *9/64*

U.S. Cl. 350—214 **2 Claims**



A retrofocus-type wide-angle camera lens is provided in which the back focus is especially long compared to the composite focal length. The lens comprises a front lens group having a negative composite focal length and a rear lens group consisting of a cemented positive lens, a negative single lens, a composite positive meniscus lens, and a single positive lens. The lens thus provided has an aperture ratio of F/2.8 and a viewing angle of over 80° with various aberrations, coma, curvature of the field and distortion highly corrected.

27,800

SULFONATED 1-ALKYLAMINO-4-TOLYLAMINO-ANTHRAQUINONES

Hans Rudolf Schwander, Riehen, Anton Zenhausern, Reinach, and Peter Hindermann, Bottmingen, Switzerland, assignors to Ciba-Geigy A.G., Basel, Switzerland

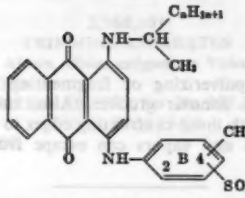
No Drawing. Original No. 3,491,126, dated Jan. 20, 1970, Ser. No. 514,702, Dec. 17, 1965. Application for reissue Jan. 14, 1972, Ser. No. 217,935

Claims priority, application Switzerland, Dec. 21, 1964, 16,422/64; Mar. 3, 1965, 2,938/65

Int. Cl. C09b *1/34*

U.S. Cl. 260—374 **5 Claims**

Dyestuffs, which in their free acid form are of the formula:



wherein n represents 1 or 2, are particularly useful for the dyeing and printing of synthetic or natural polyamide fibers.

27,801

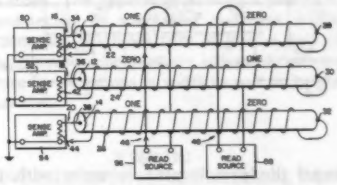
ELECTROMAGNETIC TRANSDUCERS

Stanley Schneider, Newtown Square, and Robert M. Tillman, Willow Grove, Pa., assignors to Burroughs Corporation, Detroit, Mich.

Original No. 3,290,512, dated Dec. 6, 1966, Ser. No. 115,557, June 7, 1961. Application for reissue Apr. 17, 1968, Ser. No. 724,322

Int. Cl. G11c *5/04, 17/00*

U.S. Cl. 340—174 SP **22 Claims**



The present invention relates to an electromagnetic transducer comprising a plurality of cores of magnetic material having wound thereon a number of turns to provide sense or bit windings. Wound orthogonal to these plurality of sense windings are a plurality of read circuit means which magnetically couple or fail to couple the several sense windings respectively to define a one or a zero in a selected binary coded number system, whereby upon interrogation of the read circuit means, an output is produced in those sense lines where magnetic coupling exists between the sense winding and the read circuit means.

27,802

PROTECTOR FOR ELECTRIC CIRCUITS

Aloysius J. Fister, St. Louis, Mo., assignor to McGraw-Edison Company, Elgin, Ill.

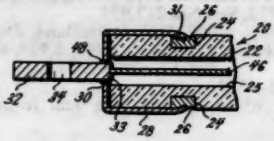
Original No. 3,644,861, dated Feb. 22, 1972, Ser. No. 59,101, July 29, 1970. Application for reissue Feb. 23, 1973, Ser. No. 335,104

Int. Cl. H01h *85/16*

U.S. Cl. 337—252 **16 Claims**

An electric fuse has a ceramic housing with annular grooves adjacent the opposite ends of the outer surface

thereof, and has yieldable annuli disposed within those annular grooves. Those yieldable annuli make it possible to "cold-form" the confronting edges, of the cuplike terminals of that electric fuse, into those annular grooves without cracking, pulverizing or fragmenting the endmost edges of those annular grooves. Also, those yieldable annuli coact with those confronting edges to limit the rate at which gases and vapors can escape from that electric fuse.



27,803

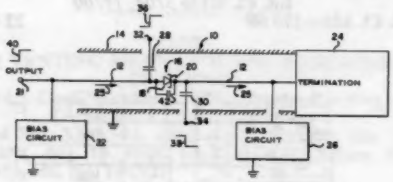
TRANSMISSION LINE COUPLED TUNNEL DIODE PULSE GENERATOR

Frederick Y. Kawabata, Beaverton, Oreg., assignor to Tektronix Inc., Beaverton, Oreg.

Original No. 3,510,690, dated May 5, 1970, Ser. No. 653,743, July 17, 1967. Application for reissue Dec. 23, 1970, Ser. No. 101,203

Int. Cl. H03 *17/58*

U.S. Cl. 307—258 17 Claims



A tunnel diode is located in series with the central inner conductor of a coaxial transmission line, with one end of the transmission line providing an output terminal and the opposite end of the transmission line being terminated in its characteristic impedance. The transmission line provides a substantially constant and predictable load for the tunnel diode so as to minimize output aberrations. Balanced drive means for the tunnel diode are disposed adjacent the diode, and comprise capacitive probes extending proximate the transmission line inner conductor immediately adjacent either side of the tunnel diode. A balanced drive is supplied to the probe so that the drive current flows between the probes and does not appear elsewhere in the transmission line.

27,804

TRANSISTOR-TRANSISTOR LOGIC CIRCUITS HAVING IMPROVED VOLTAGE TRANSFER CHARACTERISTICS

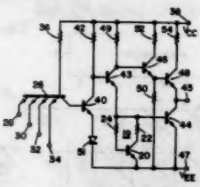
Ronald L. Treadway, Scottsdale, Ariz., assignor to Motorola Inc., Franklin Park, Ill.

Original No. 3,555,294, dated Jan. 12, 1971, Ser. No. 619,379, Feb. 28, 1967. Application for reissue Jan. 21, 1971, Ser. No. 108,522

Int. Cl. H03k *3/33*

U.S. Cl. 307—300 13 Claims

Transistor-transistor logic (TTL) circuitry having a bypass network connected to the output device of the circuitry for providing turn off drive for the output device. The bypass network includes a resistor connected in series with at least one PN junction, and such PN junction is within either a simple diode or a transistor. The bypass network prevents undesirable spiking in the output signal of the TTL logic circuitry.



27,805

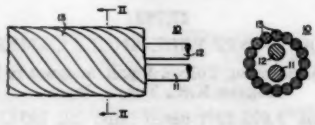
SELF-DAMPING CABLE

Mark A. Baker, Potsdam, and Charles B. Rawlins, Massena, N.Y., assignors to Aluminum Company of America, Pittsburgh, Pa.

Original No. 3,619,480, dated Nov. 9, 1971, Ser. No. 70,395, Sept. 8, 1970. Application for reissue Mar. 13, 1972, Ser. No. 234,421

Int. Cl. H01b *5/00;* H02g *7/14*

U.S. Cl. 174—130 6 Claims



A self-damping electrical conductor for suspension between spaced supports, the conductor including a hollow conductive mantle and a conductive core loosely disposed therein. The conductive core comprises at least two substantially straight conductors extending through the mantle in essentially parallel relationship to the longitudinal axis thereof, and loosely disposed with respect to each other and to the mantle. The conductive mantle and the core conductors have several different combinations of stress-strain characteristics, density, and coefficient of thermal expansion, such that the core conductors inherently seek different sags when the mantle and core are suspended under tension between supports.

27,806

PROCESS FOR SEPARATING PROTEIN FROM AQUEOUS SOLUTIONS CONTAINING DISSOLVED MATERIAL OF LOWER MOLECULAR WEIGHT USING A THIN BED OF MOLECULAR SIEVE MATERIAL

Carl S. Dienst, Edina, and Jerry M. Attebery, Minneapolis, Minn., assignors to Emery Carlton Swanson, Minneapolis, Minn.

Original No. 3,547,900, dated Dec. 15, 1970, Ser. No. 808,189, Mar. 18, 1969. Application for reissue Sept. 27, 1971, Ser. No. 184,052

Int. Cl. A23j *1/14, 1/20*

U.S. Cl. 260—112 R 10 Claims

A process for the efficient separation of dissolved protein from an aqueous solution containing dissolved material of lower molecular weight, using a molecular sieve bed with a thickness between about 10 and 100 millimeters and a feed solution volume up to as much as 65 percent of the total bed volume.

PATENTS

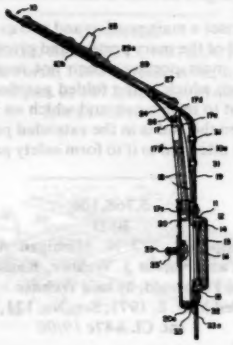
GRANTED OCTOBER 30, 1973

GENERAL AND MECHANICAL

3,768,099
WELDER'S HELMET HAVING UPWARDLY SLIDING WINDOW

Curtis T. Manz, P.O. Box 2466, Long Beach, Calif.

Continuation-in-part of Ser. No. 60,256, Aug. 3, 1970, abandoned. This application Feb. 22, 1972, Ser. No. 228,038
Int. Cl. A61f 9/06
U.S. Cl. 2—8 **19 Claims**

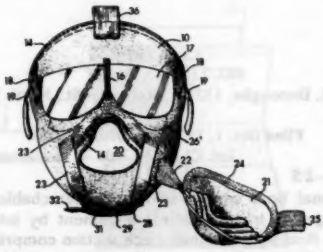


A welder's helmet having a harmful-ray-filtering window slidable upwardly out of the welder's line of sight from a frame assembly at eye level in the front wall of a face-protective shell and slidable back downwardly into the frame assembly as desired, such frame assembly providing for arcuate travel of the window rearwardly and forwardly through the upward and downward strokes, respectively, to accommodate a divergent upper wall of the shell and sliding movement being imparted to the window preferably by operating means connected to such window by a length of stiffly flexible and preferably resilient material. The operating means may be either a manually pushed knob above the window and exteriorly of the helmet or power-motivated means.

3,768,100
COLD WEATHER FACE MASK

Richard Colman, Los Angeles, and David H. Mangelsdorf, Santa Monica, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 23, 1972, Ser. No. 256,050
Int. Cl. A42b 1/18
U.S. Cl. 2—9 **4 Claims**

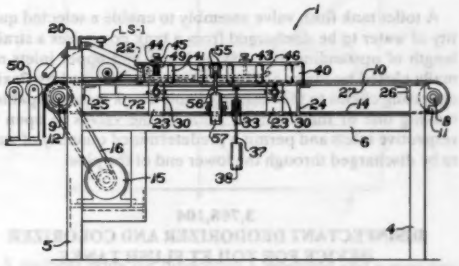


Cold weather mask for protection of faces against low temperatures and high wind velocities while providing for easy access to the mouth and nose. A wide range of adjustability to fit faces of varying sizes and shapes is produced by an adjustable chin pocket comprising the lower portion of a facepiece element of the face mask and a flexible, adjustable retention harness for maintaining the facepiece in position in close-fitting relation to the face of the wearer.

3,768,101
TRIMMING APPARATUS

Mathew Kuts, Akron, Ohio, assignor to Vulcan Corporation, Cincinnati, Ohio

Filed Feb. 18, 1972, Ser. No. 227,348
Int. Cl. B23d 19/06
U.S. Cl. 83—408 **8 Claims**



An apparatus for trimming the respective four sides of a flat elastomeric stock. The apparatus includes a pair of trim stations interconnected by a transfer conveyor wherein the respective trimming machines trim at least a pair of sides. Each of the trimming machines are adjustable automatically to compensate for variations in width as well as height of the panels of material.

3,768,102
IMPLANTABLE ARTIFICIAL URETHRAL VALVE

Clifford S. Kwan-Gett, Salt Lake City, Utah, and Stephen C. Jacobsen, Arlington, Mass., assignors to University of Utah, Salt Lake City, Utah

Division of Ser. No. 849,720, Aug. 13, 1969, abandoned. This application Feb. 3, 1972, Ser. No. 176,759
Int. Cl. A61f 1/00, 1/24
U.S. Cl. 3—1 **5 Claims**

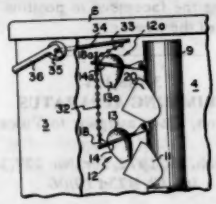
An artificial urethral valve for implantation in the bladder or urethra of an incontinent person comprising a movable valve occluding means which is retained in the closed position by means of a spring that requires a relatively high opening force and then substantially collapses to allow the passage of bladder contents through the valve. The valve occluding member retaining spring requires a relatively high breakaway or opening force to open. Thereafter the normal outflow of bladder contents through the valve is sufficient to substantially

keep the valve open. After the contents of the bladder have been voluntarily evacuated, the valve occluding member is automatically returned to the valve seat to again close the valve to a leakproof seal.

3,768,103
TOILET TANK FLUSH VALVE ASSEMBLY

Burton H. Robinson, P.O. Box 250, Adelanto, Calif.

Filed Feb. 14, 1972, Ser. No. 226,025
Int. Cl. E03d *1/34, 5/02*
U.S. Cl. 4—67 A **5 Claims**

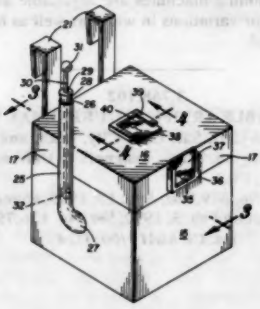


A toilet tank flush valve assembly to enable a selected quantity of water to be discharged from a tank comprises a straight length of upstanding pipe having lower and upper inlets normally closed by lower and upper valves connected by flexible operating chains to manually rockable crank means capable of moving one or the other, or both, of the valves to open the respective inlets and permit a predetermined quantity of water to be discharged through the lower end of the pipe.

3,768,104
DISINFECTANT DEODORIZER AND COLORIZER DEVICE FOR TOILET FLUSH TANKS

Dewey S.C. Sanderson, 4890 Troy Street, Denver, Colo.

Filed June 29, 1972, Ser. No. 267,411
Int. Cl. E03d *9/02*
U.S. Cl. 4—228 **6 Claims**

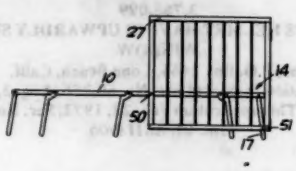


A disinfectant, deodorizer and/or colorizer device for mounting in a toilet flush tank, comprising a covered container provided with a tubular member communicating with the container and having an open upper end extending above the top of the container and the water level in the flush tank for reception of disinfectant, deodorizer and/or colorizer chemicals which may be in tablet or other form. The tubular member is closed by a stopper having a hole therein through which extends a rod for pushing the chemical downwardly for passage into the water container. Filter means cover air and water inlets and outlets in the container cover to prevent passage of undissolved colorizer particles out of the container. Hanger means are provided for mounting the container in the flush tank.

3,768,105
ADJUSTABLE BED

Francis Xaiver Gregory, 153 Northumberland Ave., Gidea Park, Essex, England

Filed July 19, 1971, Ser. No. 163,979
Int. Cl. A47b *83/00;* **A47c** *19/16*
U.S. Cl. 5—2 **5 Claims**

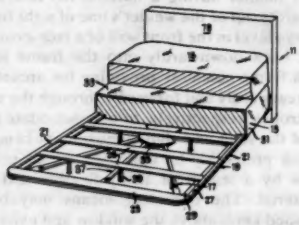


A bed comprises a main portion and two extension portions, one at each end of the main portion and pivotable to positions underlying the main portion, when not required for use. A cage is provided, which in the folded position of the bed can be attached to it to form a cot, and which on its own can form a playpen. When the bed is in the extended position, panels of the cage can be attached to it to form safety panels.

3,768,106
BED

Gordon E. Fitzgerald, 777 N. Michigan Ave., Apt. 3308, Chicago, Ill., and Norvin J. Wehner, Kansas City, Mo., assignors to said Fitzgerald, by said Wehner

Filed Mar. 8, 1971, Ser. No. 121,779
Int. Cl. A47c *19/00*
U.S. Cl. 5—131 **26 Claims**



A bed having a box spring including a base frame with transverse slats, and an interengaged spring support frame including a central hub and non-parallel support runners extending from the hub in supporting engagement with the transverse slats of the base frame. Downwardly directed legs are secured to the runners intermediate their ends to support the bed upon the floor.

In one form of the invention, vertical side panels connected to the box spring base frame overlie side surfaces of the box spring.

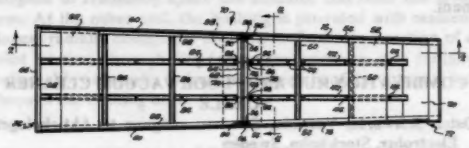
3,768,107
SECTIONAL BOAT

Clarence R. Donoughe, 1320 E. Robinson St., North Tonawanda, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,784
Int. Cl. B63b *7/04*
U.S. Cl. 9—2 S **6 Claims**

A sectional boat comprised of two detachable sections secured together in longitudinal alignment by interlocking means in a fluid tight relation. Each section comprises a bottom wall, a front wall, a rear wall and tapered side walls to form a self-contained buoyant unit. The side wall of each section are inclined outwardly at an angle relative to the longitudinal axis of the section in diverging relation from front to

rear. The rear section is slightly larger than the front section and can be inverted over the front section in a nested relation to form an enclosed compact unit for convenient storage and



transportation. Interlocking means in the form of bolts and nuts are employed to connect adjacent end walls of the sections together to form a boat of desired length.

3,768,108

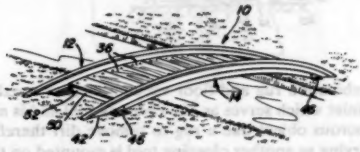
ARCHED BRIDGE CONSTRUCTION

Brenton H. Wadsworth, 1204 Garfield Ave., Aurora, Ill.

Filed Jan. 3, 1972, Ser. No. 214,864

Int. Cl. E01d *15/00*

U.S. Cl. 14—24 **4 Claims**



A unitary arch construction including a pair of arched longitudinal opposite side structural members interconnected by crossed diagonal bracing members secured therebetween by bolting. The structural members define opposing inwardly directed shoulders extending therealong and elongated transversely extending decking members extend between, overlap and are secured to the shoulder defining portions of the longitudinal structural members at closely adjacent points spaced therealong. Also, the radius of curvature of the arched longitudinal members is substantially equal to twice the span length thereof, whereby structural strength for vertical load supporting capacity is afforded in an arch construction suitable for use in the construction of a bridge whose basic side elevation presents an extremely pleasing appearance and the approach angles at the ends of different length bridges will remain constant.

3,768,109

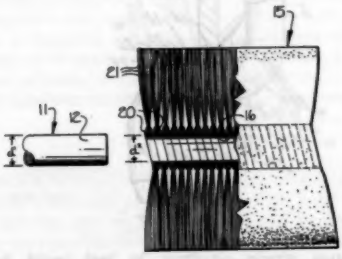
BRUSH ASSEMBLY

Winnifred A. Wardell, 1312 Biltmore Dr., Charlotte, N.C.

Filed Aug. 14, 1972, Ser. No. 280,117

Int. Cl. A46b *13/02, 7/10*

U.S. Cl. 15—21 D **5 Claims**



A brush assembly for general utility purposes characterized by simplicity in construction and ease in replacement of the brush element. The brush assembly includes a generally cylindrical support shaft having a predetermined diameter and a smooth, non-grooved outer surface. The brush assembly further includes a spiraled, generally cylindrical, flexible, resilient brush member having a predetermined outside diameter and defining a hollow interior having an initial predetermined diameter less than the diameter of the shaft. The brush member being force-fitted on the shaft to prevent relative displacement during use thereof but allowing disengagement of the brush member from the shaft for cleaning and replacement.

3,768,110

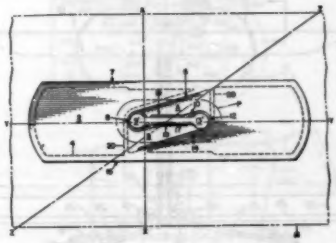
SWIVEL MOP HEAD

Alvin O. Johnson, and Herbert D. Rice, both of Westfield, Mass., assignors to Stanley Home Products, Inc., Westfield, Mass.

Filed July 1, 1971, Ser. No. 158,733

Int. Cl. A47l *13/255*; B25g *3/38*

U.S. Cl. 15—144 A **2 Claims**



A resilient body for supporting a mophead and a mop handle and having an irregularly shaped slot therethrough in the mid-portion thereof to define a flexible neck integrally joined to the body with the neck being flexed upwardly and downwardly and angularly accordingly as the mop handle is swung through its various positions relative to the mophead and with the neck normally lying in the plane of the body when unflexed.

3,768,111

CURLING BROOM AND COVER

Norman G. Lees, Box 398, Norwich, Ontario, Canada

Filed Jan. 18, 1972, Ser. No. 218,727

Int. Cl. A46b *17/04*; A63b *67/14*

U.S. Cl. 15—210 R **11 Claims**

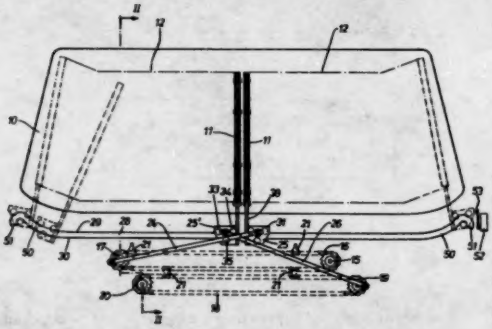
A curling broom is provided with a sock of knitted fibrous material enclosing the parts of the broom bristles that would

ordinarily contact the ice, or alternatively covering such parts except for the tips of the bristles at the lower end of the broom, the sock providing a coarse surface for rubbing the ice while holding the broom bristles together. Within the sock is a lining having a surface that permits relative movement of the bristles during sweeping without catching on the sock or the lining, the sock and lining forming a cover having means for preventing undue stretching or twisting of the sock relative to the bristles.

3,768,112
WINDSHIELD WIPER DRIVE

Erich Kolb, Eisental, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 1, 1971, Ser. No. 194,625
Claims priority, application Germany, Oct. 30, 1970, P 20 53 373.7
Int. Cl. B60s 1/20, 1/34
U.S. Cl. 15—250.21 **17 Claims**

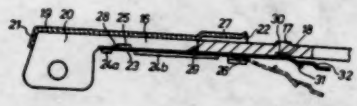


Windshield wipers are rigidly mounted on carriages guided along a guide track so that the wipers move in a translatory movement along the windshield when the carriages are on substantially straight track portions, but move angularly when the carriages are on curved track portions. Each carriage has three follower rollers for which two rollers, and one roller, respectively, engage opposite sides of the guide track so that the carriages with the wipers follow the curved track portion, without turning relative thereto and the wipers perform an angular movement to an end position.

3,768,113
WINDSHIELD WIPER ASSEMBLY

Erich Kolb, Eisental, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 26, 1971, Ser. No. 192,369
Claims priority, application Germany, Oct. 26, 1970, P 70 39 639.3
Int. Cl. B60s 1/40
U.S. Cl. 15—250.32 **9 Claims**

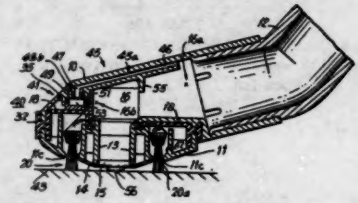


A wiper blade is provided with a carrier and a mounting element for the carrier which has an elongated channel provided with an open end. An end portion of a wiper arm is releasably insertable into the channel through the open end and a latching spring of strip-shaped configuration is loosely slidably accommodated in the channel and provided with three longitudinally spaced stand-out detent portions two of which engage the end portion of the wiper arm at spaced locations and one of which releasably engages a portion of the mounting element.

3,768,114
COMBINATION RUG AND FLOOR VACUUM CLEANER NOZZLE

Osten Schwartz, Varmdo, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Sept. 3, 1971, Ser. No. 177,665
Claims priority, application Sweden, Sept. 9, 1970, 12260/70
Int. Cl. A47l 9/06
U.S. Cl. 15—319 **26 Claims**

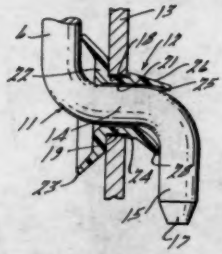


A combination rug and floor vacuum cleaner nozzle has a suction inlet which serves as one cleaning tool and is movable over a porous object like a rug to remove dirt therefrom. A brush serving as another cleaning tool is mounted on the nozzle at the vicinity of the suction inlet for movement between upper and lower positions respectively above and below the suction inlet. The suction inlet functions to remove dirt from a rug when the brush is in its upper position and the brush functions to remove dirt from a smooth object like a floor when it is in its lower position. Pneumatic mechanism operable responsive solely to operating conditions prevailing when the nozzle is moved either over a smooth object or a porous object becomes effective to automatically shift the brush above or below the suction inlet, respectively, to position the proper cleaning tool in contact with the object to be cleaned even when the vacuum producing ability of the vacuum cleaner connected to the nozzle varies within wide limits.

3,768,115
ANTI-RATTLE BUSHING

Donald R. Hoffmann, Wayne, and Stephen L. Reed, Detroit, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 14, 1971, Ser. No. 152,640
Int. Cl. B65d 7/48
U.S. Cl. 16—2 **1 Claim**



A molded plastic anti-rattle bushing adapted to prevent metal to metal contact between an apertured lever arm and an actuator rod having a shepherd's crook end portion. The bush-

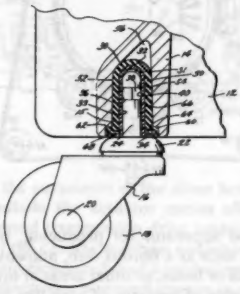
ing is received within the lever arm aperture and in turn has a bore that receives the actuator rod end portion. At one end, the bushing has an annular flange with an upstanding lip adapted to resiliently space the actuator rod from the lever arm. At the other end, the bushing is provided with resilient fingers radially collapsible inwardly to facilitate insertion of a pilot portion through the lever arm aperture and radially deflectable outwardly to facilitate insertion of the actuator rod through the bushing bore.

3,768,116

SHOCK MOUNT FOR CASTER SOCKETS

Robert L. Propst, Ann Arbor, and James O. Kelley, Spring Lake, both of Mich., assignors to Hermann Miller, Inc., Zeeland, Mich.

Filed July 26, 1971, Ser. No. 166,131
Int. Cl. A47b *91/00*
U.S. Cl. 16—43 **8 Claims**



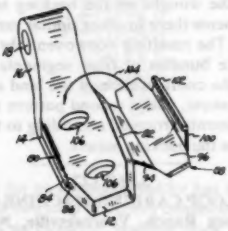
A rubber insulating sleeve is positioned between the caster socket insert and mounting socket walls. The sleeve provides a non-rigid assembly for damping the transmission of acoustical vibrations between the caster and caster supported body. The sleeve has a lower flange with a washer embedded therein which overides the lower portion of the socket insert to prevent the insert and sleeve from being undesirably drawn up into the socket opening.

3,768,117

SIDE-PIVOTED SELF-CONTAINED FASTENER-CONCEALING HINGE LEAF

Anthony P. Toldo, Windsor, Ontario, Canada, and Robert E. Watson, Orchard Lake, Mich., assignors to Swedish Crucible Steel Company, Detroit, Mich.

Division of Ser. No. 7,757, Feb. 2, 1970, Pat. No. 3,665,552.
This application Mar. 29, 1972, Ser. No. 239,094
Int. Cl. E05d *11/00*
U.S. Cl. 16—148 **1 Claim**



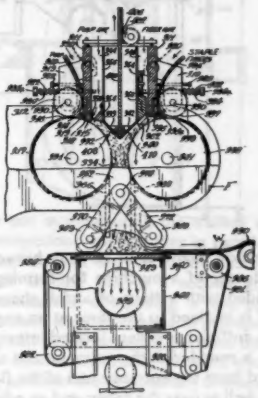
A hinge leaf of synthetic plastic material, such as polyethylene or polypropylene, is provided with fastener holes to secure the hinge leaf to the toilet seat or lid or other hinge member, and also has a recess adjacent these holes. Formed integral with the hinge leaf so that it cannot be lost or misplaced and is always at hand is a fastener hole cover which swings downward to conceal the fastener holes and has a tongue or lug which fits snugly into the recess as a detent to hold the cover in place. The cover is hinged along a side edge of the hinge leaf so as to swing thereover into detent engagement with the undercut opposite side edge.

3,768,118

WEB FORMING PROCESS

Angelo P. Ruffo, and Prashant K. Goyal, both of Roxboro, Quebec, Canada, assignors to Johnson & Johnson, New Brunwick, N.J.

Filed Jan. 21, 1971, Ser. No. 108,546
Int. Cl. D01g *25/00*
U.S. Cl. 19—156.3 **7 Claims**



A process for forming an air-laid, nonwoven web from separate supplies of individualized fibers, such as textile and papermaking fibers. Supplies of fibers are fed to oppositely rotating lickerins that are rotated at speeds which are optimum for the fibers being individualized by the lickerins. The individualized fibers are doffed from the lickerins by centrifugal force and high velocity air streams directed against the fibers clinging to the lickerin clothing. The fibers from each supply are entrained in their respective air streams, which are impelled at high rates of speed toward each other, and the air streams are combined in a mixing zone. The doffed fibers are given an initial trajectory as they leave their respective lickerins, and the inertia of the fibers in the air streams is sufficient to bring the fibers to the mixing zone and effect blending of at least a portion of the fibers from each supply in the mixing zone. The combined air stream has a gas to fiber volume ratio of at least 12,000:1, so that the fibers are relatively widely spaced in their respective streams, as well as in the combined stream. In communication with the mixing zone is a suction actuated condensing means where the fibers are deposited to produce a nonwoven web of fibers, for example, an isotropic nonwoven web. With gas to fiber volume ratios of between about 12,000:1 to about 275,111:1 in the combined stream, highly uniform webs can be produced at a high production rate up to 550 feet per minute or greater.

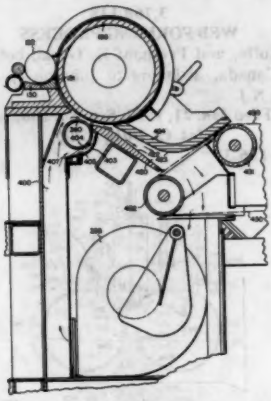
The process can form a variety of nonwoven webs, using as the fibers of these webs two different fibers of the same, or of different lengths. To vary the webs, a baffle can be interposed between the two separate air streams to control the location where the two air streams are intermixed. A novel web that can be produced by the process of the present invention is comprised of two different types of fibers, with the web characterized by having a predominance of one fiber type at one of its major faces, and a predominance of the other fiber type at the other of its major faces. The web includes a transition between the faces in which the predominance of the fibers decreases uniformly away from the face at which they predominate.

3,768,119

MACHINE FOR FORMING RANDOM FIBER WEBS

Dennis E. Wood, Penfield, N.Y., assignor to Curlator Corporation, East Rochester, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,104
Int. Cl. D01g *25/00*
U.S. Cl. 19—156.3 3 Claims



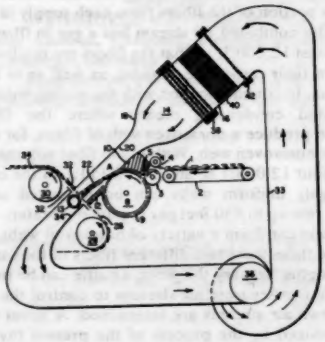
The atomization chamber or air duct between the lickerin and the condenser of a machine for forming random fiber webs is provided with a floor of airfoil shape and the duct cover or roof is inclined to the floor at an angle of not more than 15°. The doffing bar is here formed integral with the roof or cover, and is rounded at the entrance end of the duct. The saber is spaced from the entrance end of the floor to allow air flow under as well as over the saber; and an adjustable damper or valve is provided to control the amount of air flow under the saber.

3,768,120

IMPROVED AIR-LAYDOWN APPARATUS FOR PRODUCING WEBS FOR NONWOVEN FABRIC

Donald F. Miller, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 14, 1971, Ser. No. 152,725
Int. Cl. D01g *25/00*
U.S. Cl. 19—156.3 2 Claims



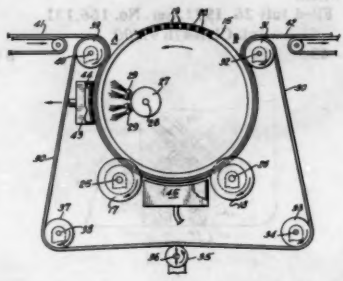
Apparatus is disclosed which is suitable for high speed production of uniform, lightweight webs by air-laydown of textile fibers. A toothed disperser roll projects the fibers into an airstream of high uniform velocity and low turbulence to form a thin fiber stream from which the fibers are deposited in web form on a moving screen. Air-flow control means adjacent the screen causes the depositing fiber stream to shift back and forth rapidly to eliminate web streaks.

3,768,121

APPARATUS (CLOSED SANDWICH WITH HIGH KNEE BACKING MEANS FORAMINOUS THROUGHOUT ITS AREA)

Frank Kalawaites, Gladstone, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation of Ser. No. 22,322, March 24, 1970, abandoned.
This application Feb. 10, 1972, Ser. No. 225,319
Int. Cl. D04h *11/00*
U.S. Cl. 19—161 P 5 Claims



A method and apparatus for producing, from a layer of fibrous material such as a fibrous web, nonwoven fabrics that contain apertures or holes, or other areas of low fiber density, and have a plurality of patterns of yarn-like bundles of fiber segments that alternate and extend throughout the fabric. One form of the method includes the steps of positioning the starting web between apertured forming means and a foraminous backing means having a plurality of protuberances and troughs alternating across its surface, then directing fluid rearranging forces through the apertures of the forming means against the fibers of the starting web, causing some of the fluid streams to strike the protuberances referred to or other solid portions of the backing means and all of the fluid streams ultimately to pass through the backing means. The tops of the protuberances on the backing means rise above the bottoms of immediately adjacent troughs by a vertical distance equal to at least about three times the average diameter of the fibers in the layer of fibrous starting material. Each forming aperture spans a plurality of the protuberances on the backing means. The fluid rearranging forces move some of the fiber segments that are in registry with the forming apertures into surrounding areas in said fibrous layer and position those fiber segments there in yarn-like bundles of closed associated and substantially parallel fiber segments. The rearranging forces also move other fiber segments that are in registry with the forming apertures into the troughs on the backing means to position those fiber segments there in other similar yarn-like bundles of fiber segments. The resulting nonwoven fabric has a first pattern of yarn-like bundles of fiber segments arranged in accordance with the configuration of the land areas of the apertured forming means, and a second pattern of yarn-like bundles of fiber segments arranged according to the configuration of the troughs on the backing means.

3,768,122

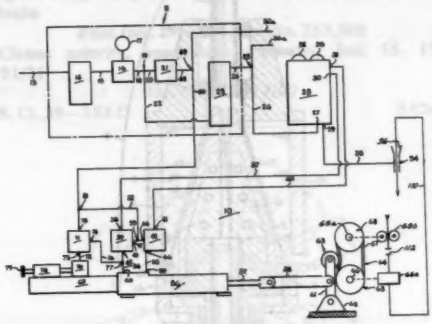
CLOSED LOOP CARDING MACHINE CONTROL

William Theodore Rauch, Voorheesville, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Jan. 17, 1972, Ser. No. 218,212
Int. Cl. D01h *5/38*
U.S. Cl. 19—240 8 Claims

A closed loop fluidic control system for carding machines including a sliver sensor means for monitoring a parameter of the sliver passing therethrough, fluidic signal means con-

nected to the sliver sensor means for producing pneumatic output signals indicating variations in the parameter of the sliver being monitored, control means connected to the fluidic signal means for receiving therefrom the pneumatic output signals produced thereby, actuator means operated by the control means in accord with the pneumatic output signals received by the latter, and means interconnecting the actuator means to the speed transmission drive of the carding machine



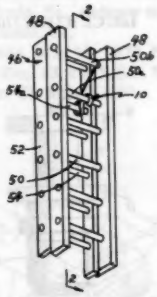
whereby when the parameter of the sliver being monitored is of a first magnitude the actuator means effectuates a first change in the speed transmission drive means thereby reducing the speed of the carding machine and when the parameter of the sliver being monitored is of a second magnitude the actuator means effectuates a second change in the speed transmission drive means thereby increasing the speed of the carding machine.

3,768,123

SAFETY DEVICE FOR AN EXTENSION LADDER AND METHOD OF MOUNTING

Frank N. Forte, 65 Dale Street, Boston, Mass.

Filed Aug. 31, 1972, Ser. No. 285,334
Int. Cl. A44b *21/00*; E06c *7/06*
U.S. Cl. 24—73 CS 3 Claims



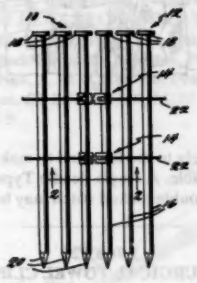
A safety device for an extension ladder has a lock member with three legs and two loop members connecting said legs, to one of which legs an elongate, resilient hook member is attached. The lock member is mounted on ladder rungs by placing one loop member directly below one ladder rung and rotating the lock member until it is above said rung, while the other loop member is now directly below a rung of another ladder, and raising said hook member to the next rung above either, and hooking it over the latter rung.

3,768,124

NAIL PACKAGE IMPROVEMENTS FOR INTERCONNECTING THE TRAILING NAIL OF ONE NAIL PACKAGE WITH THE LEADING NAIL OF ANOTHER NAIL PACKAGE

George A. Maynard, Coventry, R.I., assignor to Textron, Inc., Providence, R.I.

Filed Jan. 13, 1972, Ser. No. 217,461
Int. Cl. A44b *21/00*; B65d *83/02*
U.S. Cl. 24—81 CC 6 Claims



A device for use in connecting the trailing nail of a first group of nails interconnected in series in parallel relation by flexible elongated wires or the like secured across the shanks thereof with the leading nail of a second group of nails similarly interconnected comprising a one-piece element made of thin resilient material shaped to provide spaced trailing and leading nail shank engaging portions integrally interconnected by a central connecting portion, each of the nail shank engaging portions are of generally C-shaped configuration and operable to resiliently grip a nail shank around a substantial portion of the periphery thereof in response to a relative transverse movement of a nail from a disengaged position outwardly thereof to an engaged position therein, each of the nail shank engaging portions define an opening of a size less than the diameter of the nail shank when the latter is in a disengaged or engaged position with respect thereto and is sufficiently resilient to flex outwardly in response to the movement of a nail from the disengaged position to the engaged position to expand the opening to the shank diameter size and permit passage of the nail thereby, the connecting portion has a longitudinal extent such that when the aforesaid trailing and leading nails are disposed in engaged positions within the trailing and leading nail shank engaging portions respectively the trailing and leading nails are spaced apart a distance equal to their spacing with respect to the adjacent nail of their respective groups and is constructed to transmit transverse feeding movements of the trailing nail to the leading nail and to provide for the fracture and separation of the trailing nail shank engaging portion from the leading nail shank engaging portion in response to a rapid relative longitudinal movement of the trailing nail with respect to the leading nail.

3,768,125

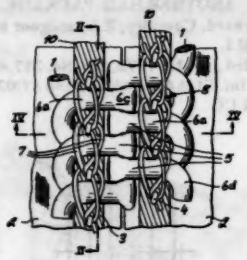
DYED SLIDE FASTENER WITH STITCHED-ON COUPLING COIL

Alfons Frohlich, Essen, Germany, assignor to Opti-Holding AG, Glarus/Schweiz, Germany

Filed Feb. 18, 1972, Ser. No. 227,503
Claims priority, application Germany, Oct. 13, 1971, P 21 51 000.9; Oct. 13, 1971, P 21 50 999.9
Int. Cl. A44b *19/14*
U.S. Cl. 24—205.16 C 14 Claims

A coupling coil is lockstitched to the longitudinal edge of a support tape with a transparent synthetic-resin mono-filamentary thread overlying the individual coil turns. The coil and the tape are dyed and the thread is left transparent. In this manner the color of the coil is visible through the attachment thread

and there is no color contrast apparent between this thread and the rest of the stringer. Heat treatment of the dyed and assembled stringer flattens the monofilament over the coil to attach the coil securely to the tape and to make the thread blend in as much as possible. A single needle Type 401 or a double-needle Type 402 double locked stitch may be used.

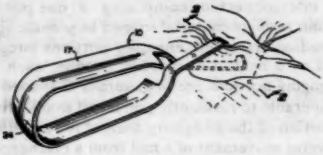


3,768,126

SURGICAL TOWEL CLIP

Robert J. Posdal, 329 Council Ct., Roselle, Ill.

Filed Oct. 16, 1972, Ser. No. 298,023
Int. Cl. A44b *21/00*; A61b *17/00*
U.S. Cl. 24—259 FC 6 Claims



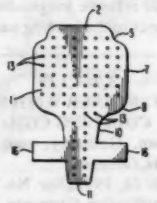
A one time use surgical towel clip having two arms readily engaging towel surfaces under compression in a crossing relationship out of contact with a patient and establishing a plane with opposingly bent ends that offset the gripped towels from the plane to oppositely snub the clip and towels against slippage.

3,768,127

THORACIC AND ABDOMINAL PLATE FOR CADAVERS AND METHOD OF USING

James D. Holmes, Sr., P.O. Box 275, Carlisle, Ind.

Filed Feb. 10, 1972, Ser. No. 225,112
Int. Cl. A01n *1/00*
U.S. Cl. 27—21 9 Claims



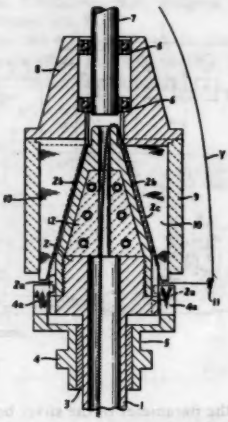
A restoration plate adapted to restore the thorax and abdomen of a cadaver which has been subjected to a postmortem examination and method of restoring therewith, comprised of a bilaterally symetrically shaped plate constructed of self supporting material Having a plurality of projections adapted to engage musculature and/or skin of the torso.

3,768,128

APPARATUS FOR CRIMPING YARN

Frederick William Hole, Devon, Tiverton, England, assignor to John Heathcoat & Co. Limited, Tiverton, Devon, England

Filed Mar. 31, 1971, Ser. No. 129,808
Claims priority, application Great Britain, Apr. 3, 1970, 15,822/70
Int. Cl. D02g *1/14*
U.S. Cl. 28—1.8 3 Claims



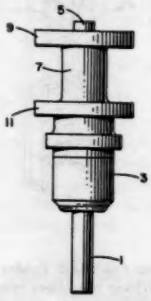
In the crimping of yarns, turns of yarn are wrapped around the wider end of a substantially conical forming surface and are advanced towards the smaller end. The forming surface is defined by a plurality of annularly spaced blades. Crimping elements are engaged in the spaces between the spaced blades so that the turns of yarn are caused to assume an undulating path as they advance to the smaller end.

3,768,129

FRICTION ROLLER FOR DRIVING HIGH-SPEED SPINNING OR TWISTING TUBE

Hans Gassner, Schweinfurt, Germany, assignor to Kugelfischer Georg Schafer & Co., Schweinfurt, Germany

Division of Ser. No. 685, Jan. 5, 1970, Pat. No. 3,673,897. This application Mar. 21, 1972, Ser. No. 236,796
Claims priority, application Germany, Jan. 4, 1969, P 19 00 402.5
Int. Cl. B21b *27/00*
U.S. Cl. 29—110 7 Claims



A friction roller and a method for producing a friction roller suitable for driving a spinning or twisting tube at high rotational speeds, the roller having tube-engaging driving surfaces formed of a wear-resistant resilient synthetic resin (such as

polyurethane), the method comprising finishing the driving surfaces of the roller by machining them while the roller is being rotated at the maximum expected driving speed, which may be of the order of 30,000 to 40,000 r.p.m.

3,768,130

LIGHT WEIGHT TUBULAR COLUMNS

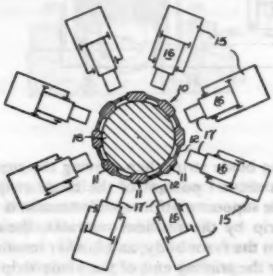
Harold Rex Jury, Norwood, Australia, assignor to Jury & Spiers Proprietary Limited, Norwood, South Australia, Australia

Filed Dec. 29, 1971, Ser. No. 213,506

Claims priority, application Australia, Jan. 15, 1971, 3791/71

Int. Cl. B23p *17/00*

U.S. Cl. 29—155 C **5 Claims**



A method of forming a light weight tubular column and a column formed by the method, wherein firstly a tubular member is extruded to have a series of circumferentially spaced beads joined by webs, slots are then pierced in the webs to form the beads into free portions which are interconnected with one another by the web portions remaining between the slots, and then the circumference of the tubular member is increased by passing the expanding tool through the member so as to increase the lengths of the free portions of the beads thus forming a truss-like configuration, without fabrication.

3,768,131

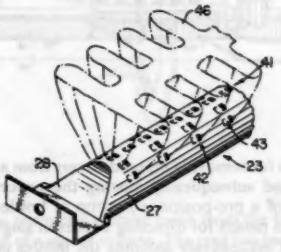
BURNER CONSTRUCTION AND METHOD OF MAKING THE SAME OR THE LIKE

Francis S. Genbauffe, Irwin, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 37,654, May 15, 1970, Pat. No. 3,647,146. This application Dec. 13, 1971, Ser. No. 207,674

Int. Cl. B21d *53/00*

U.S. Cl. 29—157 R **5 Claims**



A burner construction having wall means defining a chamber for receiving fuel from a source thereof, the wall means having a plurality of port means passing therethrough and interconnecting the exterior of the wall means with the chamber whereby fuel will issue from the chamber out through the port means. The port means are arranged in a pattern through the wall means to define a first row of aligned spaced port means and a plurality of second rows of aligned spaced port means transverse and adjacent to the first row in spaced parallel relation to each other with the spacing between adjacent second rows being greater than the spacing between adjacent port means in the first row so that secondary air will be provided in a sufficient amount for all of the port means of the burner construction for proper fuel combustion.

3,768,132

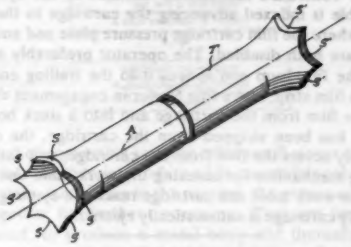
FABRICATION OF HEAT EXCHANGER TUBE BUNDLES

Daniel C. Garber, Overbrook Hills, Pa., assignor to Sun Shipbuilding & Dry Dock Company, Chester, Pa.

Filed Nov. 2, 1971, Ser. No. 194,860

Int. Cl. B23p *15/26, 15/16*

U.S. Cl. 29—157.3 R **11 Claims**



All-welded heat exchanger tube bundles, with integral mounting flanges, are fabricated by first flaring the ends of the tubes and then machining, by a rack hobbing process, three weld prep surfaces, arranged as half a hexagon, on the flared ends of the tubes. The machining is performed on one complete row of tubes at a time and, at the same time, the ends of solid stubs (which eventually become the mounting flanges) are similarly machined. A machining operation is performed on both an unwelded row of tubes, held in a fixture, and on a previously welded array of tubes in the tube bundle; after both of these operations, the two groups of weld prepped tubes may be welded together to add the new row of tubes to the bundle.

3,768,133

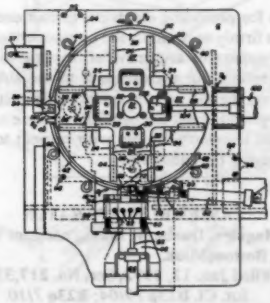
METHOD AND APPARATUS FOR STRIPPING FILM FROM A FILM CARTRIDGE

Vincent S. Scappator, Buffalo, and Allan S. Yetter, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 12, 1971, Ser. No. 198,168

Int. Cl. B23p *19/00, 19/04*

U.S. Cl. 29—200 D **13 Claims**



A method and apparatus for stripping exposed film from a film cartridge and feeding the stripped film into a processor or

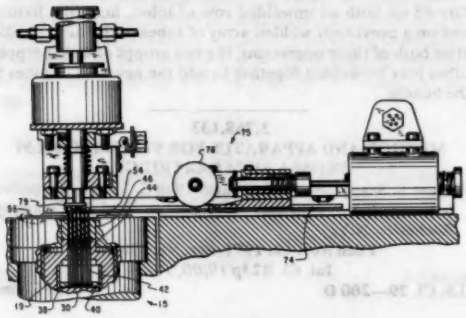
onto a take-up reel. The stripping apparatus comprises a plurality of work stations spaced along the periphery of a circular work table for supporting one or more film cartridges. The cartridges are of the type having a spool of film, an antibackup ratchet to prevent rotation of the spool in a direction to permit stripping the film from the cartridge, and an exposure aperture against which the film is pressed by a pressure plate. The work table is indexed in steps for transporting each film cartridge successively through the work stations. At the first station, a code on the film cartridge such as a notch is sensed by any suitable sensing mechanism. If the correct code is sensed indicating a predetermined type of film, a film advancing mechanism and a pawl and ratchet disabling mechanism at the first station are operated. After the ratchet is disabled, the enabled film advancing mechanism engages the film in the cartridge and advances the film adjacent the leading end through the cartridge aperture forming a film loop extending out of the cartridge. Upon signal by the operator or operator controlled mechanical element of the system, the work table is indexed advancing the cartridge to the second station where the film cartridge pressure plate and antibackup ratchet are both disabled. The operator preferably manually grasps the film loop and splices it to the trailing end of the previous film strip, and a film feeder in engagement therewith strips the film from the cartridge and into a slack box. After the film has been stripped from the cartridge, the operator preferably severs the film from the cartridge, and actuates an indexing mechanism for indexing the work table one station. When the work table and cartridge reach the ejecting station, the empty cartridge is automatically ejected.

3,768,134

SUBSTRATE PINNING

Anthony F. Reda, Yorktown Heights, and James D. Wharmby, Poughkeepsie, both of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Filed Jan. 11, 1971, Ser. No. 105,491
Int. Cl. H01r 9/00
U.S. Cl. 29—203 B **15 Claims**



Apparatus for providing electrical circuit components with terminal pins firmly secured to the component substrate. Both method and apparatus are provided serving to automatically position a terminal pin with respect to the substrate, and to form a head on the pin on one surface of the substrate, and a bulge on the pin adjacent the opposite surface of the substrate from the head to secure the pin with respect to the substrate without damaging the substrate.

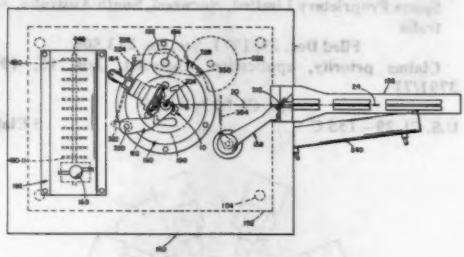
3,768,135

ASSEMBLY APPARATUS

Richard J. Maguire, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jan. 12, 1972, Ser. No. 217,336
Int. Cl. B23p 19/04; B23q 7/10
U.S. Cl. 29—208 D **13 Claims**

Apparatus for loading an elongated blade strip into components of a band type razor includes a winding spindle adapted to have one end of the blade strip attached to it, a resilient restraint adapted to engage the other end of the blade strip, a support member for receiving in supporting relation a razor body component, a drive for rotating the winding shaft, a drive for moving the support member, and control mechanism for sequentially rotating the winding shaft to coil a



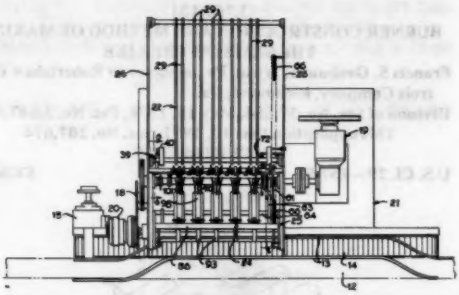
portion of the blade strip, then moving the support structure to position a second portion of the blade strip in alignment with the blade support platform while tension is maintained on the blade strip by the resilient restraint, then inserting the blade coil into the razor body, and further rotating the winding shaft to draw the trailing end of the blade strip into the razor body.

3,768,136

COVER APPLICATOR FOR BOTTLES

Robert H. Graham, Spokane, Wash., and John R. Wilson, Golden, Colo., assignors to R. A. Pearson Company, Spokane, Wash.

Filed June 23, 1972, Ser. No. 265,562
Int. Cl. B23p 19/04
U.S. Cl. 29—208 B **13 Claims**



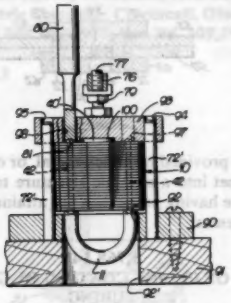
An apparatus for removing tapered covers from a horizontal nested stack and subsequently placing the covers over the upright necks of a pre-positioned group of bottles. The apparatus includes means for directing bottles in single file from a conveyor and successively stopping the bottles in groups of pre-determined numbers directly below a complementary number of angular chutes. A shuttle carriage is operated to grip individual covers from the horizontal nested stacks, move them horizontally to a position above the chutes, and subsequently release them to slide down the chutes and onto the bottles below.

3,768,137

LAMINATED PADLOCK ASSEMBLY JIG

Frank W. Russell, Whittier, Calif., assignor to Norris Industries, Inc., Los Angeles, Calif.

Filed Apr. 23, 1971, Ser. No. 136,977
Int. Cl. B25b *11/02*
U.S. Cl. 29—238 4 Claims



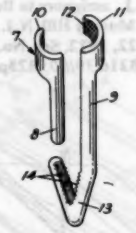
A jig especially adapted for use by a locksmith or other such skilled person in the assembly of a laminated padlock in a small shop or similar location where locks are ordinarily sold or serviced by hand. The jig comprises a base member provided with a plurality of upright pins defining an opening corresponding to the outer contour of the body laminations forming the padlock housing. The jig provided for stacking and aligning the laminations within the opening provided by the pins enables the other parts of the padlock to be fitted within the housing as it is being formed. Upon completion of the assembly of the padlock parts on the jig a clamping arm on the jig provides for pressing and holding the laminations of the padlock housing together such that the assembly of parts can be properly anchored by riveting in operating relationship.

3,768,138

BRAKE CABLE PULLER

John A. Trapp, 2531 Leslie, Detroit, Mich.

Filed Mar. 23, 1972, Ser. No. 237,376
Int. Cl. B25b *27/00*
U.S. Cl. 29—270 2 Claims



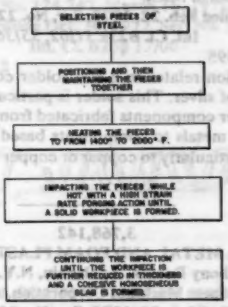
A tool for removing a brake cable from the brake lever and brake flange of a motor vehicle. The tool has two components, each of which is arcuate at one end, and has fingers which cooperate for compressing the expanded prongs of the stop member, which holds one end of the cable to the flange, one of said components having a V-shaped member at the opposite end, with serrations in the V, for gripping the cable; whereby, to remove it from the brake lever.

3,768,139

SOLID STATE METHOD FOR CONVERTING SMALL PIECES OF METAL INTO A VOID-FREE WORKPIECE

Mark E. Whalen, Pepper Pike; Norman W. Trepainier, Rocky River; Robert A. Kraus, Shaker Heights, and Joseph W. Malleck, Chagrin Falls, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Mar. 8, 1971, Ser. No. 122,110
Int. Cl. B23q *17/00*
U.S. Cl. 29—403 53 Claims


SELECTING PIECES OF STEEL
POSITIONING AND THEN MAINTAINING THE PIECES TOGETHER
HEATING THE PIECES TO FROM 1400° TO 2000° F.
IMPACTING THE PIECES WHILE HOT WITH A HIGH STRAIN RATE FORGING ACTION UNTIL A SOLID WORKPIECE IS FORMED.
CONTINUING THE IMPACTION UNTIL THE WORKPIECE IS FURTHER REDUCED IN THICKNESS AND A CONSERVE HOMOGENEOUS SLAB IS FORMED.

A method of converting scrap or other small pieces of metal into a useful, commercial product while maintaining the metal in a solid state. According to the process, the pieces are maintained together for further processing. They are impacted, while heated, to produce a metal body and thereafter subjected to continued impaction so that the pieces forming the body are welded together into a cohesive, homogeneous slab. There is also disclosure of a novel press and method of operating the press. The press is of the harmonic type. Its novel aspects include control of movement of novel platens during rotation of shafts which drive the platens and perimetral constraint of a workpiece being forged to achieve rapid impaction and self feed of a workpiece.

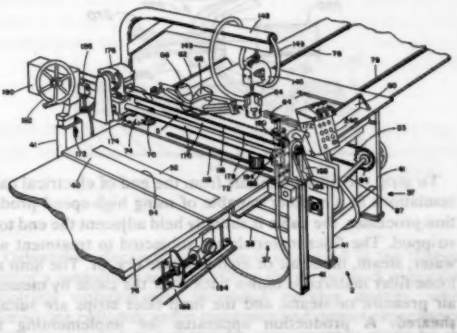
There is also disclosure of a novel method for making flakes of steel, a novel furnace including seals for maintaining the furnace gas-tight, a novel method in which the pieces of metal are scrap steel and baled together into a bale in which the scrap pieces of random size and shape become intertwined together and novel processes and apparatus for cleaning scrap or other metal pieces.

3,768,140

MACHINE FOR AND METHOD OF CHANGING WOODEN FRAMING MEMBERS INTO PREFORMED AND BOUND UNITS

Robert J. Whitney, 11606 Amarillo Ct., Dublin, Calif.

Filed Jan. 3, 1972, Ser. No. 214,723
Int. Cl. B23p *19/00*
U.S. Cl. 29—429 21 Claims



The method of and a machine for changing wooden framing members into preformed and bound units, the method com-

prising moving layers of wood members along a table, compacting the members horizontally and vertically, fixing them to one another, then sawing through a layer or layers of framing members and moving the same off the table.

3,768,141

METHOD OF SOLDERING

Duane John Schmatz, Dearborn Heights, and Chia-Ming Yen, Plymouth, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 22, 1972, Ser. No. 228,300
Int. Cl. B23k *31/02, 35/36*
U.S. Cl. 29—495 **8 Claims**

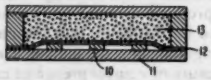
This invention relates to a soft solder containing a significant portion of silver. This solder is particularly useful in soldering together components fabricated from aluminum or aluminum based metals to components based upon more noble metals and particularly to copper or copper base alloys such as ordinary brass.

3,768,142

FORMING A METAL AND FOAM PLASTIC COMPOSITE

Thaddeus Anthony Raczek, Apalachin, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1971, Ser. No. 210,065
Int. Cl. B21d *26/04*
U.S. Cl. 29—421 **2 Claims**



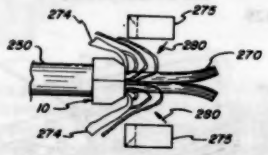
A method of fabricating a metal-clad polymeric part by shaping or forming the metal to the contour of the mold cavity and using heat expandable polymeric foam material to exert the necessary pressure to form the metal in one operation.

3,768,143

METHOD AND APPARATUS FOR STRIPPING ELECTRICAL CABLE ENDS

Robert Holmes, Jr., 15 South Rd., Wayne, N.J.

Filed July 26, 1971, Ser. No. 165,504
Int. Cl. B23p *19/02*
U.S. Cl. 29—427 **8 Claims**



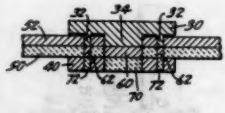
To strip the filler materials from the end of electrical cable insulations in a manner capable of using high-speed production processes, the cable is suitably held adjacent the end to be stripped. The filler materials are subjected to treatment with water, steam, moist air or high pressure dry air. The limp and loose filler material is blown back over the cable by means of air pressure or steam, and the limp filler strips are suitably sheared. A production apparatus for implementing this method is also disclosed. The method and apparatus are also designed for use on appliance power cords.

3,768,144

PROCESS FOR CERAMIC COMPOSITES

Bruno Fred Heinss, Chattanooga, Tenn., assignor to American Lava Corporation, Chattanooga, Tenn.

Filed Mar. 4, 1971, Ser. No. 121,002
Int. Cl. B23p *11/00*
U.S. Cl. 29—432 **5 Claims**



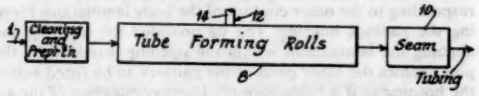
A process is provided by which metal, or other non-ceramic material, is inset into a ceramic structure to produce a composite structure having properties not attainable by previously available processes.

3,768,145

METHOD OF IN LINE COATING OF GALVANIZED TUBING

Arthur E. Ostrowski, Alsip, Ill., assignor to Allied Tube & Conduit Corporation, Harvy, Ill.

Continuation-in-part of Ser. No. 887,254, Dec. 22, 1969, abandoned. This application Sept. 4, 1970, Ser. No. 69,548
Int. Cl. B23p *3/00, 19/04, 25/00*
U.S. Cl. 29—458 **6 Claims**



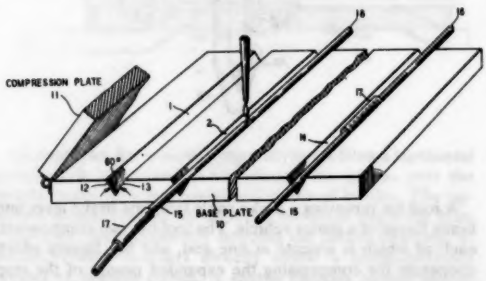
This application discloses a machine and method for manufacturing galvanized tubing in which the interior surface of galvanized tubing is painted or coated with a protective film. The machine includes apparatus for applying paint to the strip material from which the tubing is formed or to the interior of the formed tubing in such a way that the manufacturing of the tubing can proceed in a continuous manner so as to achieve high rates of production.

3,768,146

METHOD OF SPLICING OPTICAL FIBERS

Frank Adolf Braun, Lincroft, and Ralph Francis Trambarulo, Red Bank, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 22, 1972, Ser. No. 227,908
Int. Cl. B21d *39/00;* **B23p** *11/00*
U.S. Cl. 29—460 **3 Claims**



Apparatus, and a method of splicing optical fibers which includes placing the fibers in a V-shaped groove, slipping a plia-

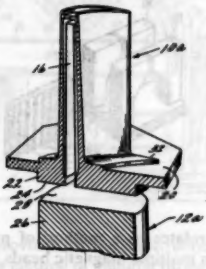
ble, metallic sleeve over the fiber ends, and then crimping the sleeve, thereby simultaneously aligning and mechanically securing the two fibers.

3,768,147

METHOD OF FRICTION WELDING

Thomas F. Berry, Greenhills; Ronald G. Rajala, Loveland, both of Ohio, and Harold L. Mullins, Hebron, Ky., assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 20, 1971, Ser. No. 209,596
Int. Cl. B23k *27/00*
U.S. Cl. 29—470.3 **5 Claims**



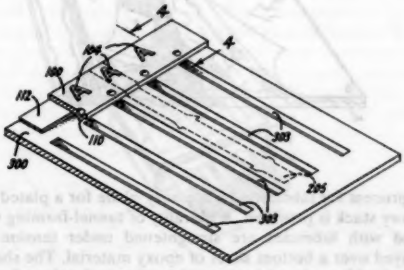
A friction welded metallic article such as a fluid directing element for turbomachinery apparatus has a cast airfoil and a wrought base joined by friction welding. One such article having a hollow interior portion is made from a hollow or cored casting and a wrought base member. There is provided a metal airfoil casting having a hollow interior portion and an enlarged foot including an interface portion. Also provided is a wrought metal base portion including an interface portion. Interface surfaces of the interface portions are placed in spaced apart opposed relationship and then the airfoil casting and the wrought base member are friction welded at their interface portions.

3,768,148

METHOD OF JOINING PRINT CHARACTERS TO HIGH SPEED PRINTER FINGERS

Gasper Pagnotta; James Kiesler, both of Schenectady, and William G. Moffatt, Hickory Hollow, Ballston Lake, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,277
Int. Cl. B23k *31/02*
U.S. Cl. 29—471.7 **2 Claims**



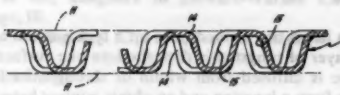
In the manufacture of high speed printer fingers having a character bar fixed to one end thereof, an improved method of joining the character bar to the printer fingers which includes forming spacer projections in the bar or finger blank prior to spot welding the parts together in order to provide a fixed gap between the finger blank and the character bar so that brazing alloy forms therein a uniform layer and flows in around the spot weld during the subsequent furnace brazing operation. The method results in a more uniform joint between the character bar and the type finger.

3,768,149

TREATMENT OF METAL ARTICLES

Omer William Swaney, Jr., Richmond, Ind., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Division of Ser. No. 124,747, March 16, 1971, abandoned.
This application Oct. 30, 1972, Ser. No. 302,204
Int. Cl. B23p *17/00*
U.S. Cl. 29—527.2 **6 Claims**



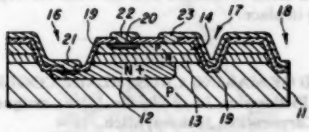
A fin and plate type heat exchanger made by a vacuum brazing process comprises dish-shaped plates positioned in confronting relation to form refrigerant passages therebetween, and in back-to-back relation to form air passages therethrough. Heat exchange fins are disposed in the air passages and extend between the backs of adjacent plates. Spacer fins are disposed in the refrigerant passages between the plates to serve as structural reinforcing members and to afford turbulent flow of the refrigerant to enhance heat exchange. Prior to assembly and brazing, the spacer fins are formed by lancing and convoluting a thin blank, such as aluminum plate, from which burrs must be removed. The blank is coated with a clad, such as an alloy of aluminum, magnesium and silicon, prior to lancing and convoluting, so that, in the brazing operation, the clad alloy forms a low melting temperature eutectic alloy with the material of the burrs effectively dissolving them, and leaving a smooth surface upon solidification.

3,768,150

INTEGRATED CIRCUIT PROCESS UTILIZING ORIENTATION DEPENDENT SILICON ETCH

Benjamin Johnston Sloan, Jr., 2510 Grandview Dr.; Billy M. Martin, 13935 Rolling Hills, both of Richardson; Loyd H. Clevenger, 3458 St. Cloud Cir., Dallas, all of Tex., and Roger S. Dunn, 3207 Seaclaire Dr., Los Angeles, Calif.

Division of Ser. No. 11,070, Feb. 13, 1970, Pat. No. 3,659,160.
This application Sept. 24, 1971, Ser. No. 183,593
Int. Cl. B01j *17/00*
U.S. Cl. 29—578 **5 Claims**

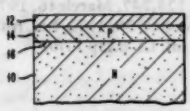


Orientation-dependent etching is employed in the fabrication of a monolithic semiconductor circuit network to provide electrical isolation and increased packing density, while minimizing collector series resistance and output capacitance. Collector contact to a transistor component is made by the direct metallization of a buried low-resistivity substrate region exposed by the preferential etching operation.

3,768,151
METHOD OF FORMING OHMIC CONTACTS TO SEMICONDUCTORS

John C. Marinace, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 809,783, March 24, 1969, abandoned. This application Nov. 3, 1970, Ser. No. 86,445
Int. Cl. B01j 17/00
U.S. Cl. 29—590 29 Claims

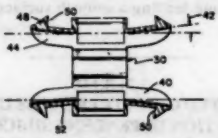


Injection lasers are formed from an n type gallium arsenide wafer. A layer of tungsten is deposited on one surface of the wafer. Zinc is diffused from within or through the layer of tungsten to form a junction and an ohmic contact between the zinc diffused region and the tungsten layer. The tungsten itself does not liquify. Nor is there liquification of the combination of the tungsten, gallium arsenide and zinc during the diffusion. The wafer is lapped, ohmic contact is made to the opposite surface, indium is electroplated on the tungsten, and the individual injection laser diodes are cleaved out of the wafer.

3,768,152
METHOD OF MAKING A MOTOR STATOR

Roy L. Swanke, Newington, and Robert M. Leonard, West Simsbury, both of Conn., assignors to Dynamics Corporation of America, New York, N.Y.

Division of Ser. No. 52,827, July 7, 1970, which is a continuation-in-part of Ser. No. 858,906, Aug. 14, 1969. This application Jan. 21, 1972, Ser. No. 219,914
Int. Cl. H02k 15/00, 15/14, 15/16
U.S. Cl. 29—596 6 Claims



A laminated motor stator for an electric motor is provided with plastic molded-in-place end shrouds and selected electrically insulated surfaces along with interconnecting structural elements holding the laminations of the stator together as a unit and providing selected electrically insulated surfaces and a smooth rounded support for the field coil windings with a calculated yield to reduce tension on the inner winding turns by the outer winding turns. A method of forming the unified and insulated stator is also disclosed in which winding tension on the field turns is reduced and the coils are supported and held firmly in place.

3,768,153
METHOD OF MAKING CROSS BLADE COOLING FANS

Charles J. Pietkiewicz, Jr., Belleville, Mich., assignor to Hayes-Albion Corporation, Jackson, Mich.

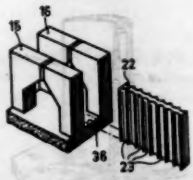
Filed Feb. 14, 1972, Ser. No. 226,310
Int. Cl. B23p 17/00, 15/06, 3/00
U.S. Cl. 29—400 B 2 Claims

A method of making cross blade cooling fans for internal combustion engines involving the steps of applying an uncured plastisol-base adhesive between the overlapping surface portions of the cross blades, piercing the cross blades and riveting to uniformly distribute the adhesive in sandwich relationship with said surface portions and then baking the assembly to cure the adhesive.

3,768,154
METHOD OF MANUFACTURING A MULTIPLE MAGNETIC HEAD

Arie Bol; Johannes van Ginkel; Adrianus Henricus Maria van der Schoot, and Petrus Henricus Swaanen, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 15, 1972, Ser. No. 234,713
Claims priority, application Netherlands, Mar. 17, 1971, 7103549
Int. Cl. G11b 5/42; H01f 7/06
U.S. Cl. 29—603 1 Claim

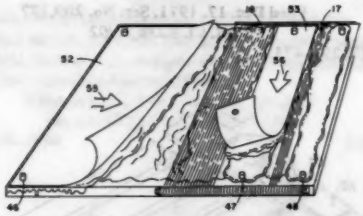


The invention relates to a method of properly providing screening plates in multiple magnetic heads. In manufacturing multiple magnetic heads, which are composed of two or more mouldings of ferrite, cemented together with screening plates cemented in sawcuts arranged in said mouldings, the screening plates are provided, for example, with a pattern of grooves, or are arranged at an angle with the axis of their cut, so as to prevent engagement on one side of a screening plate against a wall of its cut.

3,768,155
METHOD OF MAKING EPOXY TUNNEL STRUCTURE FOR PLATED WIRE MEMORIES

Guy P. Bonfiglio, Stow, and Joseph P. Farris, Chelmsford, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 11, 1972, Ser. No. 280,005
Int. Cl. H01f 7/06
U.S. Cl. 29—604 12 Claims

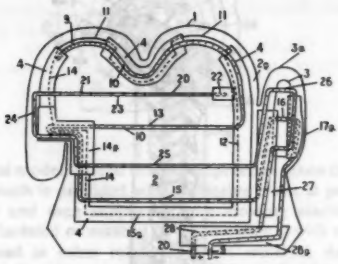


A process for fabricating a memory plane for a plated wire memory stack is provided. A plurality of tunnel-forming wires coated with lubricant are straightened under tension and deployed over a bottom sheet of epoxy material. The sheet is covered with epoxy resin up to the wires and strips of epoxy material are then placed over the bottom sheet to either side of the wires to define wire array cavities. Additional epoxy resin is then applied filling the cavities and covering the strips after which a top sheet of epoxy is laid down. After the assembly is cured, the tunnel-forming wires are withdrawn and plated wires are inserted into the resultant holes in the word pack.

3,768,156
METHOD OF FORMING ELECTRICAL HEATING PANELS FOR TEXTILE ARTICLES

Robin Dempsey Caird, Glasgow, and John Roberton Smith, Garrowhill, both of Scotland, assignors to Junex Electrix Limited, London, England

Filed Aug. 11, 1971, Ser. No. 170,829
Claims priority, application Great Britain, Oct. 28, 1970, 51,121/70
Int. Cl. H05b 3/00
U.S. Cl. 29—611 3 Claims

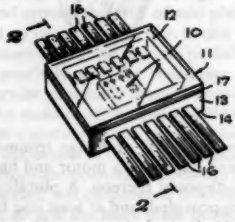


The disclosure provides for the construction of electrically heated panels and a method of manufacturing wearing apparel incorporating such panels for operation by a portable power supply. The panels are constructed by attaching parallel electrodes to a flexible electrically conductive resistance element formed by a coating of polymer containing carbon on textile material. The electrodes being in the form of tinned braided electrical conductors stitched to the textile material by an axial row of stitches through the braided conductor. In one embodiment the polymer coating is applied to the textile material before the electrodes are attached thereto while in an alternative embodiment the polymer coating is applied after the braided conductor is secured to the textile material. The method of connecting the conductor to the coating provides for good electrical conductivity.

3,768,157
PROCESS OF MANUFACTURE OF SEMICONDUCTOR PRODUCT

James L. Buie, Panorama City, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 788,719, Jan. 3, 1969, abandoned, which is a division of Ser. No. 638,361, May 15, 1967, abandoned. This application Mar. 31, 1971, Ser. No. 130,009
Int. Cl. H01c 1/02, 17/00
U.S. Cl. 29—613 10 Claims

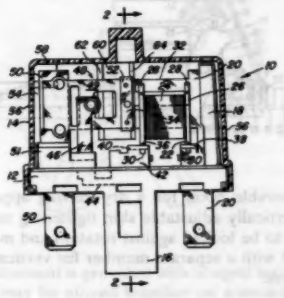


This invention relates to a process of resistor adjustment and to a semiconductor microelectronic device package, wherein a window cap or other optically transparent access means is provided in a flat pack or similar structure for such purposes as the post fabrication adjustment of microcircuit resistors by light from a source such as a laser. By providing an optically transparent cover for an integrated or thin film circuit package, post fabrication adjustment of elements such as thin film resistors by intense optical radiation is possible. The cap or window, which may be any optically transparent means suitable to the particular structure, permits a seal to be made immediately after completion of fabrication of the circuitry so as to preclude contamination by moisture or dirt. Thereafter, resistance values are adjusted by means of a focused laser beam and, if desired, an opaque paint may then be applied to the window cap to exclude radiation which might lead to spurious photo-electric effects.

3,768,158
BUZZER MANUFACTURING METHOD

Arthur J. Little, Springfield, and William R. Mayer, Rochester, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Oct. 22, 1971, Ser. No. 191,861
Int. Cl. H01h 11/00
U.S. Cl. 29—622 2 Claims

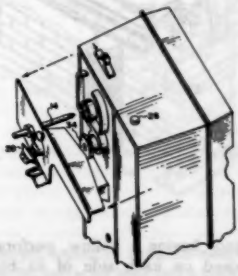


A method of fabricating a plurality of buzzers from an initial stamping. The stamping is formed having a configuration defining the metal parts of four buzzers with individual circuit portions interconnected by webs. Respective plastic bases are molded to the circuit portions of each buzzer at respective positions on the stamping and the webs are then sheared to both separate the buzzers and enable the appropriate electrical circuits to be completed.

3,768,159
CAN OPENER CUTTER ASSEMBLY RELEASE

Robert J. Emmons, Collinsville, and Maurice L. Boissonneault, Newington, both of Conn., assignors to Dynamics Corporation of America, New York, N.Y.

Filed July 12, 1972, Ser. No. 271,108
Int. Cl. B67b 7/38
U.S. Cl. 30—4 R 9 Claims



A push-pull latch in a powered household can opener is manually movable between alternate positions in both of

which it is subjected to favorable frictional conditions with respect to a pivotally mounted cutter assembly that is removable for cleansing purposes.

3,768,160

REMOVABLE SHAVING-HOOD UNIT OF A DRY-SHAVING APPARATUS

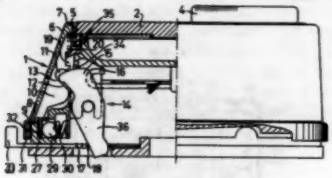
Wytse Bergsma, and Petrus Jozephus Johannes Vaes, both of Oliemolenstraat, Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 3, 1971, Ser. No. 139,568

Claims priority, application Netherlands, May 29, 1970, 7007872

Int. Cl. B26b *19/42*

U.S. Cl. 30—34.2 10 Claims



A removable hood for a dry-shaving apparatus provided with a vertically adjustable skin tightening member which is arranged to be locked against rotation and maintained in engagement with a separate member for vertical adjustment by spring force.

3,768,161

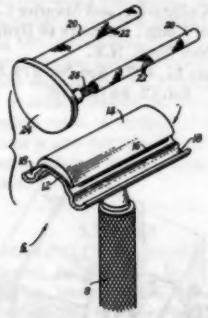
RAZOR WITH LUBRICANT DISPENSER

William Miller, 52 Haviland Lane, White Plains, N.Y.

Filed Dec. 21, 1971, Ser. No. 210,319

Int. Cl. B26b *21/44*

U.S. Cl. 30—41 3 Claims



A safety razor having a hollow, perforate and rotatable cylinder disposed on each side of its blade support and adapted to stretch the skin and simultaneously dispense the lubricant uniformly in advance of the blade while the razor is in use.

3,768,162

RAZOR HANDLE

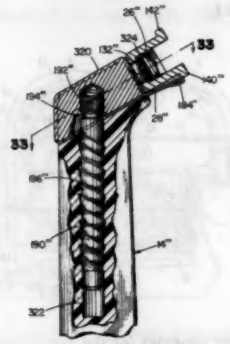
Roger L. Perry, Lynnfield Center, Mass., assignor to The Gillette Company, Gillette Park, Mass.

Continuation-in-part of Ser. No. 124,216, March 15, 1971.

This application Dec. 13, 1971, Ser. No. 207,357

Int. Cl. B25g *3/08*; B26b *21/52*, *21/06*

U.S. Cl. 30—47 23 Claims



A razor handle unit having at one end thereof a head portion adapted to slidingly receive and retain a razor blade assembly.

3,768,163

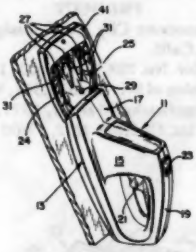
GRASS TRIMMER SHARPENING DEVICE

Edwin J. Weber, Baltimore, and Gerald J. Sesta, Glenarm, both of Md., assignors to Black and Decker Manufacturing Company, Towson, Md.

Filed Feb. 23, 1972, Ser. No. 228,564

Int. Cl. B24f *3/00*; B24b *3/36*

U.S. Cl. 30—138 7 Claims



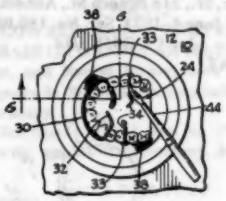
A portable, powered grass or hedge trimmer or the like comprising a housing enclosing a motor and having a handle and trigger means disposed thereon. A plurality of relatively movable blades are provided, and at least one blade is driven by the motor. The blades include cooperable teeth adapted to cut grass or the like. A novel sharpening device is provided and includes a body or sheath provided with abrasive stones adapted to sharpen the teeth of at least one blade when the motor is energized and the blades moved relative to one another. The sheath, when in place, can also protect one or more of the blades and thereby helps prevent accidental injury when the device is not in use.

3,768,164

METHOD OF MAKING A DENTAL APPLIANCE

Peter R. Breads, Buffalo, N.Y., assignor to Great Lakes Orthodontic Laboratory Inc., Buffalo, N.Y.

Filed Oct. 26, 1972, Ser. No. 300,881
Int. Cl. A61c 13/00
U.S. Cl. 32—2 12 Claims



A dental model formed from an impression taken from a patient's mouth is provided with anchoring wires at prescribed locations and then supported in a molding machine. The model is isolated or masked by surrounding it with small pellets of lead or other relatively dense material. An acrylic material in liquid form, a major constituent of which is methyl methacrylate, is applied to a selected portion of each wire, usually within the periphery of the model. Immediately thereafter a preheated sheet of thermoplastic material, a major constituent of which is methyl methacrylate, is applied to the model and shaped to conform thereto in a manner such that the selected portions of the anchoring wires are embedded in the plastic material. Upon cooling the resulting product, known as a retainer, is separated from the model.

3,768,165

DENTURE

Axel L. Nielsen, 1316 East Elza, Hazel Park, Mich.

Filed June 5, 1972, Ser. No. 259,808
Int. Cl. A61c 9/00, 9/00
U.S. Cl. 32—17 11 Claims

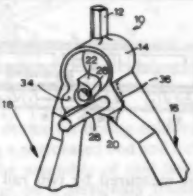
The basic plate portion proper of a full-mouth denture is molded in the usual manner for mating engagement over buccal, lingual and corresponding frontal gum surfaces of the patient's jaw; and around the arch of said plate portion it is specially molded on its mating interior. In this respect said interior will in all cases afford one or more partial depth depressions which mate precisely with the remaining stub of a partially worn or otherwise physically damaged natural tooth or teeth. Optionally, the molding of the plate portion may be such as to fit nicely with a surface of the gum at which there may have been a tooth extraction at one or more locations, as well as to afford an appropriate opening or openings to matingly receive one or more sound and undamaged full-height or permanently capped teeth, so that the basic plate portion is fully mated to the jaw about the entire dental arch. At spaces corresponding to the locations of the worn tooth stubs, tooth members simulating in appearance that of the originals of the stubs are molded to the exterior of the basic denture plate portion; being backed by solid grinder formations which are also rigidly bonded to correspondingly shaped surfaces of said basic portion. These formations lie in direct vertical register with tooth stubs, so that masticating force is transmitted therethrough directly from the jaw. The replacement tooth shell components are thus located a trifle laterally outwardly of the grinder portions or formations, hence of the existing tooth stubs for which they substitute; and the arrangement of such shells in relation to other tooth parts of the denture and/or undamaged teeth in the mouth is such as to afford a natural-appearing tooth array all around the dental arch. In instances in which there has been an extraction and no tooth stub is present, the denture mates fully about the gum alone, and in this zone a fully sized and shaped replacement tooth portion is bonded to the plate portion. Otherwise, the stub-engaging portions of the plate anchor the latter to the jaw, the plate similarly anchors to existing undamaged teeth, and migration of any such tooth, damaged or not, is prevented.

3,768,166

DRAWING INSTRUMENTS

Phillip Mitchell Elliott, 411 N. 7th St., Schiller Park, Ill.

Filed May 8, 1972, Ser. No. 251,617
Int. Cl. B43l 9/20
U.S. Cl. 33—27 B 17 Claims



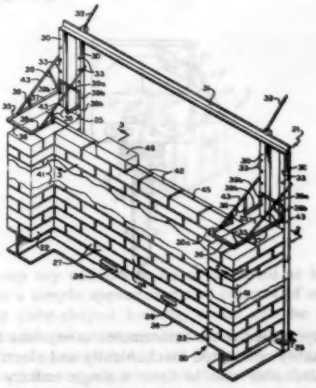
A drawing instrument is provided with integral legs joined at one end which may be pinned together on a co-acting pivot center at the joined end and which may further include rotatable journal elements mounted to the legs for adjustment of the legs by threaded shafts associated with a thumbwheel.

3,768,167

BRICK LAYING JIG

Richad H. Viau, 409 Broadview Dr., Syracuse, N.Y.

Filed Aug. 30, 1971, Ser. No. 176,041
Int. Cl. E04g 21/18
U.S. Cl. 33—85 2 Claims



A jig for off-the-job laying of irregular-shaped sections of brick facade has a flat surfaced base and a backstop including a plurality of precisely vertical members secured to the base at their bottom and braced to the factory building at their top. One or more horizontally extending guide frames, outlining

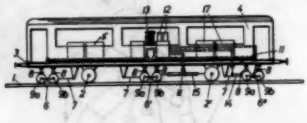
with their inner edges a portion or all of the facade top, are secured to the vertical members with upwardly sloping support rods having ends hooked around in back of the members. Each member has holes in its front surface at intervals spaced one above the other a distance equal to the brick height plus desired mortar joint thickness and each frame has a pair of rearwardly projecting pins adapted to be precisely engaged in the holes of adjacent members at the same level whereby the pins may be disengaged and the frames slid upward to the next pair of holes after each course of bricks is laid. When more than one frame is used a mason's line may be stretched from one to the other as a guide in constructing a connecting flat-faced portion of the irregular shaped facade.

3,768,168

MOBILE TRACK GAGE MEASURING APPARATUS

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, Vienna, Austria

Filed June 24, 1971, Ser. No. 156,245
Claims priority, application Austria, July 2, 1970, A5961/70
Int. Cl. B61k 9/08
U.S. Cl. 33—144 **5 Claims**



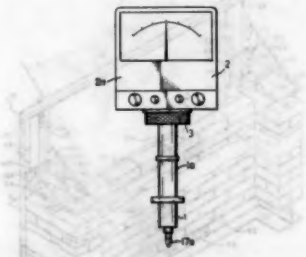
The track gage is measured by two rail sensing elements which are biased in opposite directions against the respective track rails. The lateral movement of the sensing elements in respect of each other is converted into an electrical signal proportional to this movement, and this signal is transmitted to a signal indicator or recorder.

3,768,169

MINITYPE ELECTRONIC MICROMETER

Yasutaka Ito, Tokyo, Japan, assignor to Tokyo Seimitsu Co. Ltd., Tokyo, Japan

Filed Sept. 8, 1970, Ser. No. 70,291
Claims priority, application Japan, Oct. 14, 1969, 44/97223
Int. Cl. G01b 3/22, 5/00; G03b 1/64
U.S. Cl. 33—172 E **5 Claims**



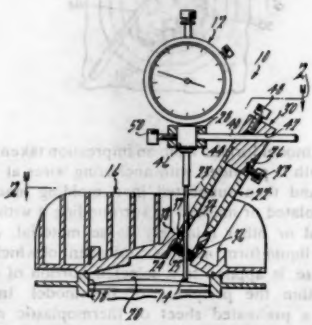
A minitype electronic micrometer comprises a detecting unit releasably connected mechanically and electrically to an amplifier-indicator unit to form a single unitary instrument similar in configuration to a dial gauge. The amplifier-indicator unit comprises an oscillator, phase detector, A.C. amplifier, D.C. amplifier and meter housed in a casing provided with means for attachment of the detecting unit comprising a differential transformer housed in a tubular casing and having a movable core with a work-engaging portion. A coupling mechanically connects the tubular casing of the detecting unit rigidly to the casing of the amplifier-indicator unit and at the same time connects the differential transformer of the detecting unit electrically to the oscillator and the A.C. amplifier of the amplifier-dectector unit.

3,768,170

APPARATUS FOR MEASURING PISTON POSITION

Arthur W. Schafer, Sr., 215 Branch St., Almont, Mich.

Filed June 4, 1971, Ser. No. 150,087
Int. Cl. G01b 5/14
U.S. Cl. 33—181 AT **22 Claims**



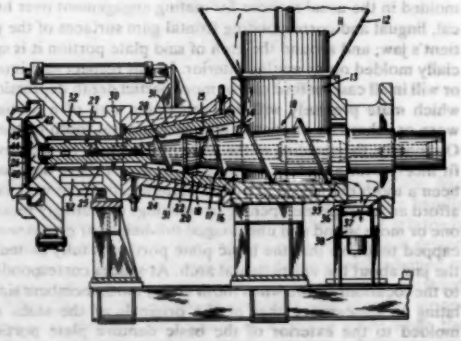
An apparatus, for measuring the axial position of a piston within a cylinder bore of an internal combustion engine with a spark plug opening aligned at a predetermined angle with respect to the axis of the cylinder bore, which has tubular member threadedly engaging the spark plug opening at one end with a gauge mounting extending therefrom at the other end for mounting a gauge so that a spindle for the gauge extends substantially parallel to or at a relatively small angle with respect to the cylinder bore axis. The tubular member is provided with an off-axis side opening adjacent with and in alignment with the spark plug opening through which the spindle extends into engagement with the piston.

3,768,171

DRYING WET ELASTOMERIC MATERIAL

William A. Bird, and Bobby D. LaGrone, both of Vicksburg, Miss., assignors to U.S. Rubber Reclaiming Co., Inc., Vicksburg, Miss.

Filed Aug. 16, 1971, Ser. No. 171,973
Int. Cl. F26b 7/00
U.S. Cl. 34—12 **4 Claims**



Excess water is removed from wet elastomeric material such as clean-up from the floor of a synthetic rubber plant by advancing the material along a vented system of passageways of

decreasing size to compress the material and progressively drive water out of it, and regurgitate it along the way, while maintaining a pressure of from 400 to 1,200 pounds per square inch and a temperature of from 200° to 350° F, and straining to provide materials adapted for normal utilization in producing rubber and like products.

3,768,172

TORNADO FLOW SEPARATOR FOR PROCESSING FINE-GRAIN OR GRANULAR MATERIAL

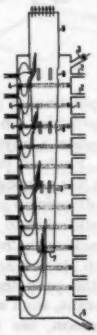
Heinrich Klein, and Rudolf Pieper, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 15, 1971, Ser. No. 198,627

Claims priority, application Germany, July 30, 1971, P 21 38 165.7

Int. Cl. F26b *17/10*

U.S. Cl. 34—57 E **7 Claims**



In tornado flow dryers operating on helical flow or annular flow principles, excess drying media are withdrawn during operation of the dryers from the axial region of the drying chamber. The means for withdrawing the excess drying media is in the form of a pipe extending into the drying or reaction chamber along at least half of the length thereof, the pipe being provided with additional exhaust openings distributed over the length thereof.

3,768,173

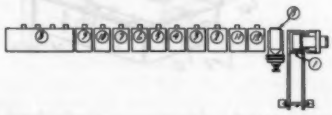
APPARATUS FOR DRYING WORKPIECES IN BULK

Richard J. Jessup, Bloomfield Hills, and Andrew N. Sulfaro, Sterling Heights, both of Mich., assignors to Oxy Metal Finishing Corporation, Warren, Mich.

Filed July 17, 1972, Ser. No. 272,646

Int. Cl. F26b *25/06*

U.S. Cl. 34—131 **10 Claims**



An apparatus for drying workpieces in bulk while disposed within an elongated foraminous treating barrel formed with an opening extending longitudinally of the ends thereof. The apparatus includes a framework which defines an upwardly open three-dimensional chamber into which the treating barrel is adapted to be lowered and in which it is oscillated such that the opening therein is alternatively aligned with a pair of discharge ports located in opposed sides of the chamber through which heated air is discharged against the periphery of the barrel and through the opening against the workpieces therein. An exhaust port is provided in the lower region of the chamber for continuously withdrawing moisture-laden air from the chamber and from the interior of the barrel which is recirculated in admixture with make-up air by means of a blower through a heat exchanger and thereafter is discharged through the discharge ports in the chamber.

3,768,174

FLUIDISED BED DEVICE

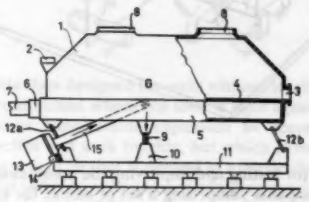
Jacques Biaggi, Ville D'Avray, France, assignor to Escher Wyss Aktiengesellschaft, Zurich, Switzerland

Filed Apr. 19, 1972, Ser. No. 245,466

Claims priority, application France, Apr. 19, 1971, 7113669

Int. Cl. F26b *9/00*

U.S. Cl. 34—164 **4 Claims**



Fluidised bed device for draing and/or cooling fine granular products, having a perforated bed and a chest for supplying air into said bed; the assembly of said bed and said chest supported by springs on a stationary frame; a vibrator causing vibration of said assembly; one of said springs being a helical spring arranged perpendicular to the centre of gravity of said assembly and bearing the weight of said assembly; the other of said springs being plate springs arranged remote from said helical spring and guiding said assembly relatively to said frame.

3,768,175

POP-UP LEARNING TOY

Allen D. Hill, Hermosa Beach; Ake L. Larsson, Palos Verdes Estates, and Hubert A. Rich, Westminster, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

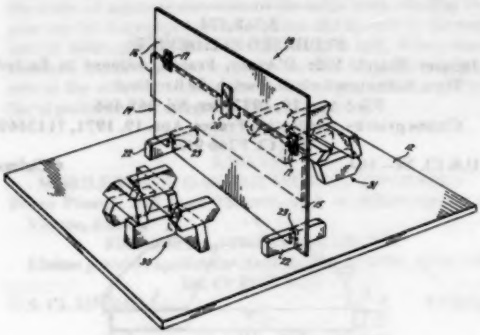
Filed Nov. 2, 1972, Ser. No. 303,293

Int. Cl. G09b *1/06*

U.S. Cl. 35—9 R **4 Claims**

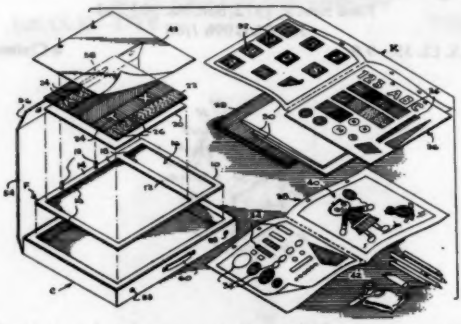
A pop-up toy which can be constructed at low cost and which has a simple appearance and manner of operation, including a cube-shaped housing which can be squeezed to release the lid and cause a pop-up member to rise through the top of the housing. A toy set includes numerous pop-up blocks, each having a marking on the outside that represents a question, and each block having a pop-up member which displays a marking that shows the answer to the question. In one embodiment, the lid and pop-up member are formed integrally with brackets that attach to the housing. In another embodiment, the pop-up member is carried on one end of a normally-extended, coiled, extensible member having its other end seated in the cube-shaped housing.

3,768,176
GAME FOR IMPROVING COMMUNICATION SKILLS
Thomas J. Huddleston, 915 Crestland Dr., Ballwin, Mo.
Filed Feb. 2, 1972, Ser. No. 222,875
Int. Cl. G09b 19/00
U.S. Cl. 35—22 R 11 Claims



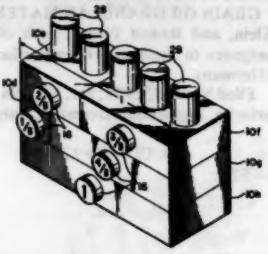
A game for testing and improving the communication skills of its participants comprising a set of blocks for each participant, each set of blocks being identical and each having a plurality of blocks therein, each block within a set having identifiable parameters, and each being adaptable for assembly with the other blocks in its set in a variety of ways. One of the participants is selected to communicate a structure made from his blocks to the other participant (s) who in turn is/are required to duplicate the communicated structure. Means are provided for blocking visual contact of the selected participant's blocks by the other participant(s).

3,768,177
EDUCATIONAL DEVICE
Richard A. Thomas, 4909 Sydclay Dr., Richmond, Va.
Filed Aug. 2, 1972, Ser. No. 277,149
Int. Cl. G09b 19/00
U.S. Cl. 35—27 15 Claims



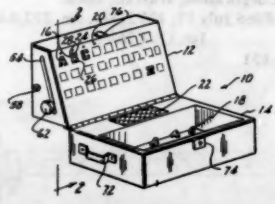
A multiple sheet composite amusement and educational instruction kit for both children and adults. One facet of the kit teaches and enable picture composition while another facet thereof serves to preliminarily educate a child or student in the basic numbers and letters of the alphabet. The subject composite kit provides amusement and education including both original sketching or doodling upon certain components of the kit, as well as cutting out and/or detaching component unit members and sticking them onto background boards or sheets to compose either artistic composite pictures or to learn the alphabet or numeral sequences.

3,768,178
EDUCATIONAL ARITHMETIC TOY WITH INTERCHANGEABLE NUMERALS
Stanley H. Glassman, 41 Harvest Ln., Commack, N.Y.
Continuation-in-part of Ser. No. 105,363, Jan. 11, 1971. This application Sept. 9, 1971, Ser. No. 178,951
Int. Cl. G09b 1/36, 19/02
U.S. Cl. 35—31 G 5 Claims



An educational manipulative toy useful as an aid in teaching arithmetic concepts is provided wherein a plurality of blocks may be stacked to provide a physical representation of an arithmetic relationship. Each of the blocks has a predetermined dimension which has a specific value relationship relative to a corresponding dimension of each of the other blocks, with the arithmetic relationship to be physically represented being exemplified by stacking the blocks so that the predetermined dimension of each block is arranged in a particular juxtaposition relative to the predetermined dimension of the other blocks. Indicia means, such as pegs having numbers or fractions imprinted thereon, are interchangeably mounted upon the blocks. Variation of the indicia means serves to vary these specific numerical values involved in a given arithmetic relationship. Thus, variation of specific numerical values may be accomplished merely by interchanging the indicia means without altering the relative juxtaposition of the blocks or the relative arithmetic relationship being displayed.

3,768,179
EDUCATIONAL DEVICES
Charles E. Woodford, 14044 Marlowe, Detroit, Mich., and Wilbert C. Powe, 1927 Pasadena, Detroit, Mich.
Filed June 19, 1972, Ser. No. 264,004
Int. Cl. G09b 1/08
U.S. Cl. 35—35 D 8 Claims



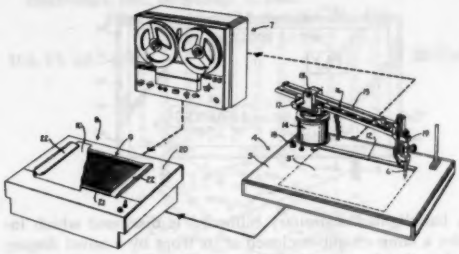
An educational device particularly adapted for teaching alpha-numeric associations includes (a) a display board having a first plurality of alpha-numeric indicia formed therein, (b) a second plurality of alpha-numeric indicia, each of which is adapted to be coincident with one of such first plurality of indicia formed in the display board, (c) means for electrically signalling the proper coincidence of each of such plurality of indicia to its respective alpha-numeric indicia formed in the display board, and (d) means for audibly reproducing the identifying sound corresponding to each of such alpha-numeric indicia.

3,768,180

GRAPHIC FIGURE REPRODUCTION FOR VISUALLY IMPAIRED STUDENTS

Carl Borje Arrdal, Molnlycke, Sweden, assignor to Saab-Scania Aktiebolag, Linkaping, Sweden

Filed Feb. 9, 1972, Ser. No. 224,724
Int. Cl. G09b *21/02*
U.S. Cl. 35—38 3 Claims



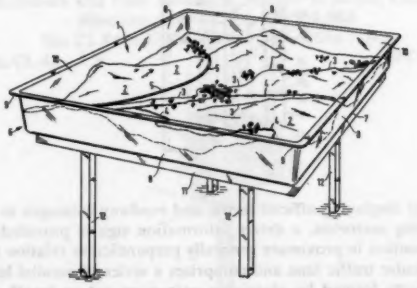
Recordable electric signals are produced by signal generating means connected with a tracing stylus that is guided over a graphic figure by a sighted person. Such signals control horizontal movements of a carriage that carries a striker pin, moving the pin in correspondence with stylus movements. As the carriage moves, the pin repeatedly thrusts up against deformable sheet material to produce therein a succession of raised projections that depict the traced figure in a manner detectable with the fingers.

3,768,181

TOPOGRAPHICAL DISPLAY DEVICE

Max Kiener, c/o Diol.-ing. Adolf D. Berglein 3, Hannover/Germany Lange Laube 19/III, Furstenfeldbruck, Germany

Continuation-in-part of Ser. No. 823,730, May 12, 1969, abandoned. This application Aug. 16, 1971, Ser. No. 172,062
Int. Cl. G09b *29/12*
U.S. Cl. 35—41 2 Claims



A device for displaying topographical features containing a terrain of a kneadable mass, the employment of a mixture of sawdust particles and and evaporation resistant liquid for said kneadable mass, in combination with means including chain-like parts for representation further elongated topographical features on said terrain, and a substantially rectangular casing of artificial material including integrally a bottom, vertical side-walls and a horizontal flange affixed to the upper rim of said side-walls for supporting a cover-plate, at least the latter being of transparent material, for encasing said terrain of kneadable mass and said means.

3,768,182

SOFT AND SECURELY HELD SHOE

Al Powers, Los Angeles, Calif., assignor to Nippon Rubber U.S.A. Corp., Los Angeles, Calif.

Filed Apr. 13, 1972, Ser. No. 243,780
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 AM 10 Claims

An athletic shoe designed for wear without stockings, which avoids discontinuities where the shoe is tight against the foot, which permits considerable expansion to accommodate a range of widths and arch heights, but which firmly encircles the foot for a tight fit that is desired in athletic shoe wearing. The shoe has soft side walls and a reinforcing overlay on either side, with the bottom of the overlay extending between a point immediately behind the ball of the foot to a point immediately behind the arch, and with the top of the overlay extending forwardly from the bottom and to a locgtion above the soft side walls, the top of the overlay carrying lacing rings so that the tops of the overlays are laced together over the tongue. The rear of the shoe has a padding and liner extending with a forward directional component over the top of the stiff counter. The tongue of the shoe is very wide and long and is greatly skived at its edges.

3,768,183

CLEAT STRUCTURE

Frank J. Fessenden, 31136 Flying Cloud Dr., Laguna Niguel, Calif.

Filed Oct. 30, 1972, Ser. No. 301,889
Int. Cl. A43c *15/00*
U.S. Cl. 36—67 R 5 Claims

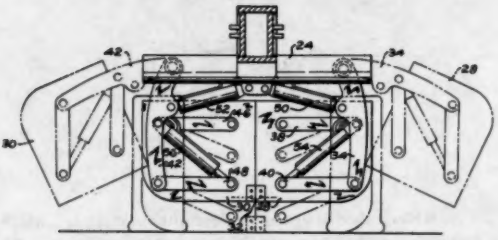
A cleat structure comprising a base member having the configuration of a cleat and a friction surface on an exterior portion of the base member. In usage, the friction surface increases the frictional engagement of the cleat structure with a playing surface to reduce slipping between the cleat structure and the playing surface. The friction surface on the exterior portion of the base member is preferably formed from a coating of a particulate material on the base member.

A method of forming a cleat structure in which a base member having the configuration of a cleat is held and a frictional surface is then formed on an exterior portion of the base member. The position of the frictional surface with respect to the base member provides frictional engagement between the cleat structure and a playing surface when the cleat is in use.

3,768,184
CLAMSHELL-TYPE, SELF-LOADING TRANSPORT WAGON

Donald E. Sunderlin, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 21, 1972, Ser. No. 219,762
Int. Cl. B60p 1/00; E02f 3/62
U.S. Cl. 37—4 7 Claims

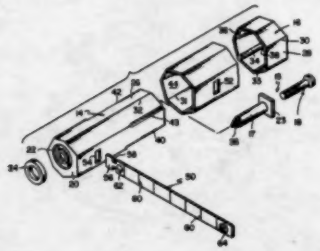


There is disclosed a self-loading dump wagon having a pair of half-shell like members forming a material receiving receptacle. The half-shells are supported for movement toward and away from one another for scooping and discharging a load, and for vertical movement to provide ground clearance.

3,768,185
VEHICLE IDENTIFICATION APPARATUS AND INDENTING METHOD AND MANDREL

Herbert B. Sternberg, New York, N.Y., assignor to Automated Reference Corporation, New York, N.Y.

Filed May 10, 1972, Ser. No. 252,065
Int. Cl. G09f 3/02
U.S. Cl. 40—2.2 16 Claims

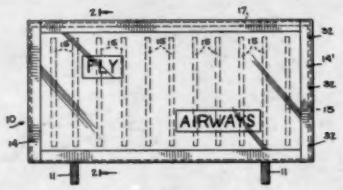


Recording apparatus for affixing registration and other data to the body of an automobile. There is a removable cover element for said data mounted on a bracket element. Special matched displaced sliding surfaces are provided at at least some of the intersections of the flat prismatic faces of the inside of the cover element and at the outside of the bracket element, which matching surfaces provide a snug fit and are more closely spaced than are the adjacent prismatic faces of the cover and bracket elements, thereby providing space for metal inwardly displaced during an indenting process performed on the outside of the cover element to record the data. In said indenting process the cover is mounted on a mandrel having a similar configuration to that of the bracket.

3,768,186
STATIONARY BACKLIGHTED BILLBOARD, BILLBOARD DISPLAY PANEL

Bernard S. Chase, 1717 Kane St., Lindenhurst, N.Y.; Raymond H. Frederick, 17 North Ave., Montvale, and Victor T. Gorglione, 40 Lewis St., Old Bridge, both of N.J.

Filed Aug. 18, 1971, Ser. No. 172,618
Int. Cl. G09f 7/00
U.S. Cl. 40—125 K 7 Claims

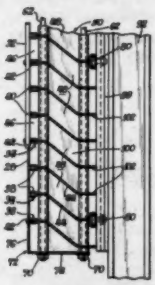


A backlighted stationary billboard is disclosed which includes a lamp chamber closed at its front by a novel display panel so that lamps within the lamp chamber may illuminate the display panel from behind. The novel billboard display panel includes a unitary fiber glass and polyester resin panel having a display sheet embedded therein with the display indicia applied to both sides of the display sheet. A novel process of making the novel display panel is disclosed. The panel itself and process are claimed in a divisional application.

3,768,187
WIND SPILLING DRIVER DIRECTION SIGN FOR HIGHWAYS

Samuel B. Dunne, P.O. Box 200, Amboy, Ill.

Filed Jan. 27, 1972, Ser. No. 221,210
Int. Cl. G09f 07/08
U.S. Cl. 40—125 N 6 Claims



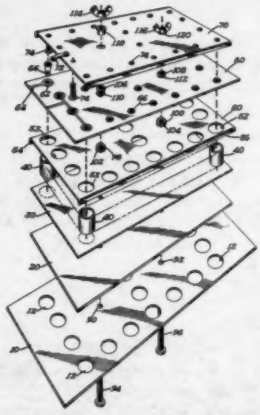
For displaying official traffic and roadway messages to oncoming motorists, a driver information sign is provided for disposition in proximate generally perpendicular relation to a vehicular traffic lane and comprises a series of parallel letter supports formed by aluminum extrusions cut to length and spaced apart by stacks of intervening spacers bound together by tie rods to form a sturdy and lightweight assembly. The letter supports have grooved frontal edges defining a message face wherein one or more rows of message letters having individual structural integrity span adjacent letter supports and are attached thereto by screws. The spacers and letter supports form wind tunnels that minimize wind forces on the sign by passing wind freely through the message face and the sign structure. Laterally deflected excursions of the letter supports block vision through the sign and define a visually continuous background surface for lettering in the message face. Anchor bolt receiving grooves formed in the rear edges of a dispersed plurality of the letter supports receive sign supporting forces

that can be widely dispersed to avoid stress concentrations and patterned to accommodate a wide variety of supporting structures. If desired, the letter supports can be shaped along both edges for attachment of letter characters in two message faces on opposite sides of the sign.

3,768,188
READOUT

Aelred J. Kurtenbach; James B. Morgan, both of Brookings, S. Dak., and Paul A. Espeset, Los Angeles, Calif., assignors to Daktronics, Inc., Brookings, S. Dak.

Filed Feb. 15, 1972, Ser. No. 226,458
Int. Cl. G09f *13/06*
U.S. Cl. 40—130 E **20 Claims**

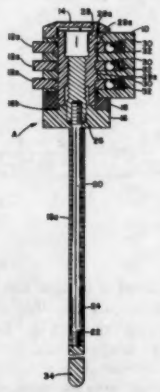


A seven-segment readout of the "dot" segment type in which light for each dot is coupled from a lamp through a light guiding cylinder sandwiched between a lamp board holding the lamp and a light diffusion member to a dot defining aperture of a faceplate, which dot defining apertures are configured to form the segments of a readout.

3,768,189
LOCKING DEVICE FOR NARROW OPENINGS

Robert S. Goodrich, El Segundo, Calif., assignor to James Kalfsbeek and Peter Kalfsbeek, both of Arbuckle, Calif.

Filed Dec. 6, 1971, Ser. No. 205,003
Int. Cl. F41c *27/00*; E05b *65/00*; B65d *55/14*
U.S. Cl. 42—1 N **8 Claims**

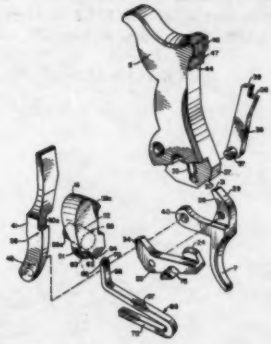


A locking device for narrow openings in which an expandable member is disposed about the shaft of a combination lock mechanism. The combination lock mechanism includes an inner cylinder carrying the shaft and an outer cylinder into which the inner cylinder is threaded. Rotation of the shaft and inner cylinder will cause the inner cylinder to be threaded into the outer cylinder and thus drawn inwardly into the combination lock. This will result in axial compression of the expandable member which, in turn, results in circumferential expansion thereof, so that the expandable member will be urged into pressure engagement with the interior of the narrow opening. The lock mechanism is further adapted to prevent rotation of the shaft and inner cylinder, unless the combination lock is opened, to prevent unauthorized use of the locking device.

3,768,190
LOADING GATE ARRANGEMENT FOR SINGLE ACTION REVOLVER

William B. Ruger, Southport, and Lawrence L. Larson, Bethany, both of Conn., assignors to Sturm, Ruger & Co., Inc., Southport, Conn.

Filed Jan. 3, 1972, Ser. No. 215,127
Int. Cl. F41c *17/08*, *17/00*, *1/00*
U.S. Cl. 42—66 **29 Claims**

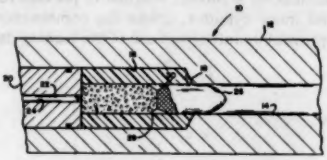


The loading gate arrangement for a single action revolver comprises a loading gate pivotally mounted on the frame of the revolver by means of a rearwardly extending longitudinally disposed pivot stud, the loading gate having an integrally formed hub portion that is disposed in front of the pivot stud and is formed with retaining flange and detent surfaces. A trigger interlock element connected to and movable with the trigger and a loading gate interlock element located on the loading gate pivot stud cooperate to prevent the trigger from being moved and the hammer from being cocked when the loading gate is open and to prevent the loading gate from being opened when the hammer is cocked. A spring loaded gate retainer and detent member having a horizontally disposed arm portion extending forwardly from the loading gate and a vertically disposed finger portion extending upwardly adjacent the loading gate cooperates with the retaining flange and detent surfaces of the loading gate to retain the loading gate in position on the frame and to releasably detain the loading gate in its closed position when closed and in its open position when open. A laterally extending lug portion of the cylinder latch cooperates with the detent surfaces of the loading gate and with the loading gate retainer and detent member to withdraw the nose of the cylinder latch from engagement with a cylinder latch notch of the cylinder when the loading gate is open.

3,768,191
CHAMBER LINER FOR CASELESS AMMUNITION FIREARMS

Franklin A. Vassallo, Lancaster, N.Y., assignor to Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y.

Filed Apr. 26, 1971, Ser. No. 137,290
Int. Cl. F41c *21/12*; F41f *17/06*
U.S. Cl. 42—76 A **4 Claims**

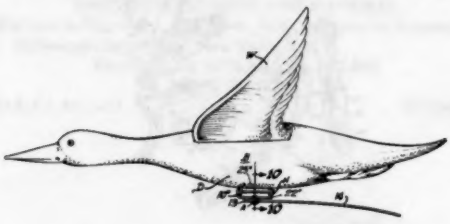


A caseless ammunition firearm having a bore communicating with a barrel containing a caseless propellant and a projectile, the walls of the barrel containing a removable low thermal conductivity sleeve or liner fabricated of polytetrafluoroethylene.

3,768,192
MOUNTING MEANS FOR ANIMATING EXISTING DECOY

Samuel Caccamo, 1102 Camino Pablo, San Jose, Calif.

Continuation-in-part of Ser. No. 125,595, March 18, 1971, Pat. No. 3,736,688. This application Sept. 27, 1971, Ser. No. 183,809
Int. Cl. A01m *31/06*
U.S. Cl. 43—3 **3 Claims**



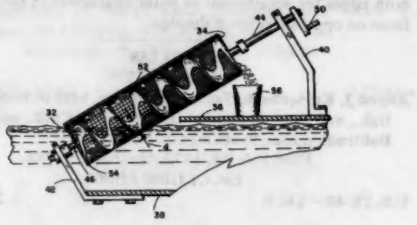
A means for animating an existing decoy on the end of a flexible arm for up and down movement therewith as well as pivotal movement into the direction of the wind and rockability from side to side about a horizontal axis upon an attaching means mounted on the end of the flexible arm. The animating means includes a plate with projecting ears mounted on the underside of the decoy. The attaching means includes a clevis mounted for movement about a substantially vertical axis. Hinge pin means pass through the ears and legs of the clevis to permit additional movement of the decoy about a substantially horizontal axis relative to the end of the flexible arm.

3,768,193
BRINE SHRIMP HARVESTING APPARATUS

S. Paul London, Palo Alto, Calif., assignor to Metaframe Corporation, Maywood, N.J.

Filed Oct. 15, 1971, Ser. No. 189,522
Int. Cl. A01k *71/00*
U.S. Cl. 43—6.5 **9 Claims**

Apparatus comprising a raft for floating along the surface of the body of water, the raft including a net for skimming the surface of the body of water and communicating with a sluice provided at the front end portion of the raft. A cylindrical screen extends partially into the sluice and communicates with the net for entrapping brine shrimp which are skimmed off the surface of the water by the net. The cylindrical screen includes an internal helical member which is coextensive therewith, the screen and helical member both being simultaneously rotated for helically conveying entrapped brine shrimp from the sluice to appropriate collection buckets provided on the top-side of the raft.



3,768,194
WEEDLESS BASKET PLUG

Harry E. Murray, 412 East Pierce, Kirksville, Mo.

Filed Oct. 10, 1972, Ser. No. 295,850
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.1 **4 Claims**

A weedless basket plug formed of a flexible ribbed basket, sets of hooks spacedly mounted to a rod located inwardly of the basket, and an inwardly and forwardly directed flexible shield associated with each set of hooks that is secured at its outer rear end to the basket and whose inner forward end is movably mounted to the rod.

3,768,195
FISH LURE

Albert C. Proietti, 49 Copeland St., Quincy, Mass.

Filed Apr. 27, 1971, Ser. No. 137,842
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.33 **2 Claims**

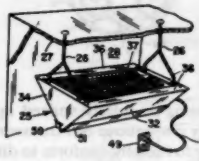
A fish lure has a sheet of faceted material extending around the shank of a fish hook, which, when light strikes a facet, it is reflected, thereby attracting fish. Extending around the faceted material is a transparent sleeve that protects the sheet. The hook shank is mounted on a swivel by means of a loop, and the sheet material extends through the loop to provide two lengths which extend from the loop along and outside the shank. Said sleeve may have portions that are colored to resemble small fish or otherwise attract them by different shades that are light and dark relative to each other.

3,768,196

ELECTRIC FLY KILLER

Robert E. Iannini, Milford, N.H., assignor to Rid-O-Ray Inc., Milford, N.H.

Filed Dec. 2, 1971, Ser. No. 204,235
Int. Cl. A01m *1/22*
U.S. Cl. 43—112 7 Claims



An electric fly killer is suspended near the ceiling of a room to dispense a soft fluorescent light attractive to flies. It comprises an elongated trough-like receptacle of V cross section having inclined side walls, a wide top opening and a narrow bottom opening. A detachable closure and collection tray covers the bottom opening. A black fluorescent tube imparts fluorescence to a coating on the side walls to draw flies through a pair of spaced apart, concave, electrode grids. The grids are parabolic to avoid rebound of the dead flies out of the device.

3,768,197

TAKE-APART DOLL

Juky Shimamura, Matsudo, Japan, assignor to Asaki Corporation, Tokyo, Japan

Filed Aug. 21, 1972, Ser. No. 282,368
Int. Cl. A63h *3/16*
U.S. Cl. 46—22 5 Claims

A take-apart doll comprising a head and neck portion, a transparent bell shaped body portion having a first opening at the top thereof and a second opening at the bottom thereof, an interchangeable apparel suitable for fitting within said body portion, and a leg portion having a base part of a first diameter, and a top part of a second diameter smaller than the first diameter, whereby the different portions are assembled by inserting the neck portion within the first opening of the body portion, and inserting the leg portion within the bottom opening and tightly fitting about the neck portion, with the apparel being placed within and adjacent the body portion and with the base part acting as a base for the assembled doll.

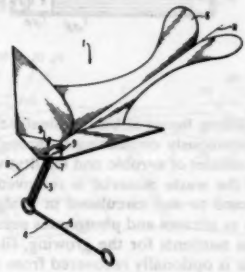
3,768,198

TOY AIRPLANE OF FOLDABLE SHEET MATERIAL AND LUNCHING MEANS FOR AND METHOD OF MAKING SAME

Irvin L. Fields, 459 Tomaka Avenue, Ormond Beach, Fla.

Filed Aug. 2, 1972, Ser. No. 277,237
Int. Cl. A63h *27/00*
U.S. Cl. 46—79 32 Claims

A toy airplane of foldable sheet material which is constructed so as to glide through the air with a horizontal velocity component after being released in the air above a predetermined starting velocity. A wing and body section of the airplane may be constructed either of a single piece of foldable sheet material or of two separate sheets of foldable sheet material. The wing section and body section are clamped in position with respect to one another by a single piece of wire which is bent over the folded portions of the airplane configuration. This same single piece of wire also extends downwardly through a single aperture on the underside of the airplane configuration to form a hook for launching the airplane. This single piece of wire is arranged symmetrically around the mid-point of the hook and the longitudinal centerline of the airplane and includes two bent over clamping sections adjacent the opposite ends of the wire. The wire extends between the folds in the sheet material such that the only portion of the wire open to the bottom of the airplane is the hook, while the only portion of the wire open at the top is the extreme end positions forming the clamping connection with the outermost layer of sheet material. A launching device in the form of a relatively rigid rod section having closed loops at the ends thereof for attaching rubber bands is provided. The rubberbands are releasably engageable with the hook at the underside of the airplane. The method of constructing the airplane includes cutting out predetermined pattern from flat sheet material, such as synthetic resinous material, forming crease lines along the desired fold lines for the airplane configuration, cutting apertures in the sheet material for accepting the wire to be utilized as the hook and clamping mechanism, and folding the flat sheet material into the desired airplane configuration while inserting the wire through the holes and bending the wire to clamp the wing section in position with respect to the body section of the airplane and to form the hook at the underside of the airplane.

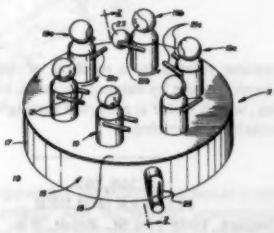


3,768,199

BALL PASSING TOY

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif.

Filed Feb. 24, 1971, Ser. No. 118,392
Int. Cl. A63h *11/00*
U.S. Cl. 46—119 9 Claims



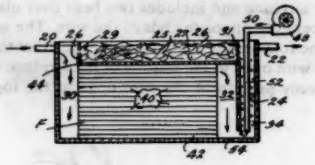
A toy comprising a plurality of spaced-apart objects having arm means on which a ball or other discrete object can rest. Upon actuation of a driving mechanism, the objects pass the ball from one to another in a continuous operation.

3,768,200

APPARATUS FOR THE PRODUCTION OF ALGAE INCLUDING A FILTERING MEDIUM

John W. Klock, Tempe, Ariz., assignor to Research Corporation, New York, N.Y.

Filed July 16, 1971, Ser. No. 163,366
Int. Cl. A01g *31/00;* **A01h** *13/00*
U.S. Cl. 47—1.4 **5 Claims**



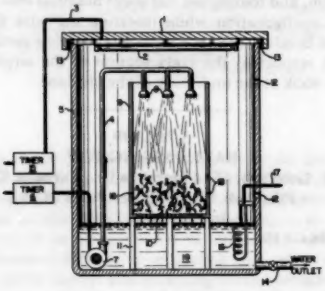
Waste-containing liquor is biochemically treated in a tank or cell by continuously circulating it through a filter media containing quantities of aerobic and facultative bacteria, after a quantity of the waste material is removed, the remaining liquor is directed to and circulated in a algal growth tank. Minerals such as nitrates and phosphates present in the waste liquor serve as nutrients for the growing, filamentous algae; carbon dioxide is optionally recovered from the aerobic bacterial metabolism chamber and introduced into the algal growth tank. The filter tanks and the algal growth tanks may be independently arranged for serial or parallel flow of liquor.

3,768,201

METHOD OF SPROUTING BEANS

Byong W. Yoo, 4320 Rowalt Dr., #102, College Park, Md.

Filed Nov. 7, 1972, Ser. No. 304,477
Int. Cl. A01g *31/02*
U.S. Cl. 47—16 **4 Claims**



This invention relates to a method of and apparatus for producing bean sprouts by subjecting seeds to timed sprays of heated water, which water is recycled throughout the spraying until the seeds have sprouted.

3,768,202

FLOWER HOLDER

Julia E. Wheelock, 1045 11st St., Beloit, Wis.

Filed Jan. 17, 1972, Ser. No. 218,205
Int. Cl. A01g *5/00*
U.S. Cl. 47—41.13 **6 Claims**

A flower holder for use in different vases comprising a hollow, generally spheroidal body formed of resilient plastic, the body having a plurality of longitudinally arched segments with their ends joined together adjacent the axis of the body, the segments having stem receiving openings spaced therealong

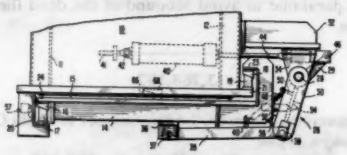
and the segments being angularly spaced apart so that the body is longitudinally continuous but transversely discontinuous to allow the body to radially conform to different vases.

3,768,203

CLOSURE OPERATING STRUCTURE

Edward A. Bellucci, Erie, Pa., assignor to Amsco Industrial Company, Erie, Pa.

Filed Jan. 26, 1972, Ser. No. 220,789
Int. Cl. E05d *15/58*
U.S. Cl. 49—254 **19 Claims**



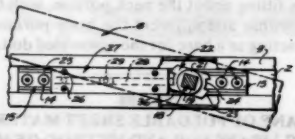
Closure movement assembly providing linear movement of a closure member in a direction transverse to a chamber opening so as to move the closure member into or out of locking position and, also providing in series, rotational movement to swing the closure member away from or toward the chamber; such dual movement of the closure member being provided with a single uninterrupted drive motion.

3,768,204

CONCEALED LOCKING MEANS FOR ROTATABLE WINDOWS

Axel W. Anderberg, 1437 Bluebird Ave., Los Angeles, Calif., and George A. Taylor, La Crescenta, Calif., assignors to said Anderberg, by said Taylor

Filed Oct. 4, 1972, Ser. No. 294,972
Int. Cl. E06b *3/40;* **E05b** *65/06;* **E05c** *17/06*
U.S. Cl. 49—390 **5 Claims**



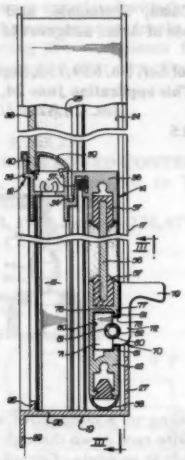
A concealed locking means for a window mounted for rotation about a vertical axis within a fixed frame, the locking means being disposed adjacent the vertical axis and normally limiting the angular movement of the window; the locking means being accessible for release upon such limited angular movement to permit 180° pivotal movement of the window before relocking the window.

3,768,205

SLIDING PANEL DECORATIVE FRAME, HANDLE, AND LATCH MEANS COMBINATION

Abraham Grossman, 9339 Rhea Avenue, Northridge, Calif.

Filed Nov. 8, 1971, Ser. No. 196,510
Int. Cl. E05d *13/06*
U.S. Cl. 49—450 3 Claims



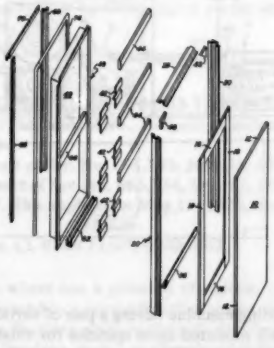
A sliding panel construction for a framed opening such as a window opening, wherein one of the horizontal panel rail members carries a slidable latch means cooperable with a jamb frame member, the latch means including a unitary integral latch handle and bolt member so constructed and arranged to cooperate with a stile member of the panel, a feature strip on the rail member, and a selectively spaced ported latch bolt receiving member provided on one of said jamb frame members.

3,768,206

COOLER DOOR FOR USE IN AN OFFSET DOOR OPENING

Cleo M. Lingle, 100 Linco Road, Henderson, Tex.

Filed Sept. 27, 1972, Ser. No. 292,553
Int. Cl. E06b *7/16*
U.S. Cl. 49—486 6 Claims



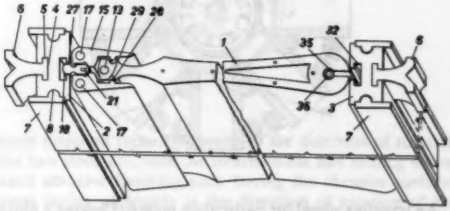
A cooler door for use in an offset door opening formed of a front cover having a top rail, a bottom rail and side rails secured to the back of the corresponding portions of the front cover. Channels are mounted to the top and side rails and extend rearwardly thereof. A back cover, having smaller dimensions than the front cover, is located rearwardly of the front cover. Flanges extending forwardly of the back cover bear against limbs of the channels. Closures, located outwardly of the flanges and channels and rearwardly of the rails, are fastened to the flanges, the channels and the rails to hold the door rigidly in assembled position.

3,768,207

SHUTTING AND OPENING DEVICE, PARTICULARLY FOR DOORS

Massimo Mongelli, and Ruggero Vinciguerra, both of Rome, Italy, assignors to Archibernetica S.r.l., Rome, Italy

Filed May 24, 1972, Ser. No. 256,465
Claims priority, application Italy, June 4, 1971, 50814 A/71
Int. Cl. E06b *3/00*
U.S. Cl. 49—503 6 Claims



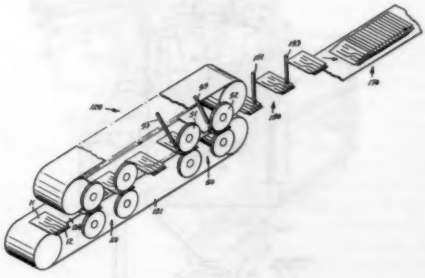
A shutting and opening device, particularly for doors, comprising in combination, a panel destined to form the door, hinged on a vertical edge, a pair of section members located throughout the height on both sides of the panel near the free edge, and a shutting list, located in the simmetry plane of the panel, destined to enter into a groove provided in the fixed frame or to be extracted therefrom, according to either a push towards the plane of the panel, or a pull outwards will be applied at whatever point of each of said section members.

3,768,208

ROLLING AND BURNISHING OF CONTACT SURFACES

George J. Plichta, Ford, and Hans Weller, Roselle Park, both of N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 789,580, Jan. 7, 1969, Pat. No. 3,606,708.
This application Mar. 15, 1971, Ser. No. 124,419
Int. Cl. B24b *7/00, 9/00*
U.S. Cl. 51—5 3 Claims



Method and apparatus for smoothing metal coated surfaces by successive rolling and burnishing operations. The apparatus performs rolling and burnishing operations automatically, using hard polished rollers and a flexible burnishing wheel having automatic compensation for wheel wear. The workpiece is advanced through the rolling and burnishing stations by two opposed conveyor belts which grip the pieces therebetween with the portion to be rolled and burnished protruding to one side of the belts.

3,768,209

IMPELLING WHEEL FOR PARTICULATE MATERIAL

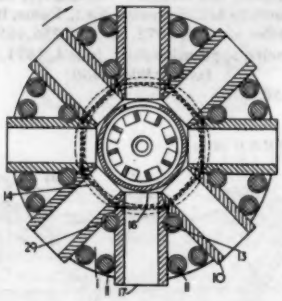
Thomas James Punter, Farnborough, and Peter John Baldwin, Bourne End, both of England, assignors to Vacu-Blast Limited, Slough, England

Filed Mar. 27, 1972, Ser. No. 238,058

Claims priority, application Great Britain, Mar. 29, 1971, 8,110/71

Int. Cl. B24c 5/06

U.S. Cl. 51—9 12 Claims



An impeller wheel for particulate material having a plurality of tubes radially positioned for impelling the material under the action of centrifugal force. The impeller wheel has a distributing rotor for the material at the axis of rotation of the wheel, the rotor having blades which are shaped to induce the material to be fed to the inner ends of the tubes in the stream of restricted width while the tubes are each rotatable about their longitudinal axis to bring different parts of the tubes into line with the stream so as to be subject to wear selectively.

3,768,210

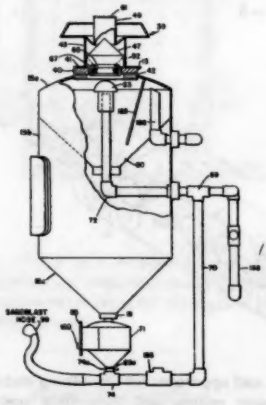
AUTOMATIC SANDBLAST MACHINE

Clifford Johnson, 1536 Roberta Dr., San Mateo, Calif.; Martin D. Duncan, 15846 Via Del Sol, San Lorenzo, Calif., and Laurance A. Sannes, 625 Canyon Dr., Pacifica, Calif.

Filed June 23, 1972, Ser. No. 265,882

Int. Cl. B24c 7/00

U.S. Cl. 51—12 10 Claims



An air driven sandblast machine comprising a storage means for the sand, a storage pot with an automatic filling device which operates to fill the storage means on the stopping of the machine and a selective air driven shaker system which may be alternatively usable in slurry blasting. The device further includes a muffler system to reduce noise.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

3,768,211

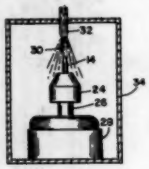
APPARATUS FOR PROFILING BONDING NEEDLES

Harry Da Costa, Scottsdale, and Charles G. Thornton, Phoenix, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Division of Ser. No. 859,133, Sept. 18, 1969, Pat. No. 3,631,645. This application June 24, 1971, Ser. No. 156,523

Int. Cl. B24c 3/22

U.S. Cl. 51—15 1 Claim



In the bonding of a conductive wire to an electrical apparatus, the wire runs down through the hole in a hollow needle and extends at an angle of about 90 degrees with the needle at the tip thereof and the wire as it exits from the needle is bonded to a bonding pad comprising part of an electrical apparatus by a combination of pressure and heat. If the inside and outside profiles of the tip of the hollow needle are not properly rounded, bad bonds will result in that the wire may break. Abrasive blast means are disclosed for giving the tip of the needle a proper smooth and rounded profile both internally and externally.

3,768,212

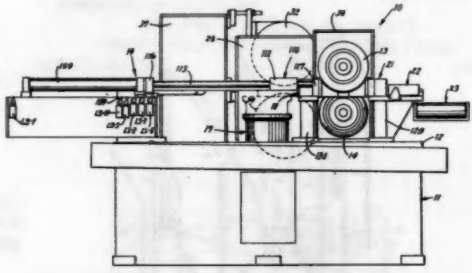
GRINDING MACHINE

John A. MacKay, Warren, Mich., assignor to Unison Corporation, Madison Heights, Mich.

Continuation-in-part of Ser. No. 1,256, Jan. 7, 1970, Pat. No. 3,616,579. This application Nov. 1, 1971, Ser. No. 194,646

Int. Cl. B24b 7/12

U.S. Cl. 51—82 R 16 Claims



A grinding machine having a pair of vertically aligned grinding wheels mounted upon spindles for rotation about parallel axes. Elongated guides extend toward and away from a grinding region disposed between the wheels to guide a plurality of workpieces into engagement with and away from the grinding wheels. The guides provides tunnel-like inlet and outlet guide passages communicating with the grinding region. A large quantity of cooling fluid is supplied to and confined to the

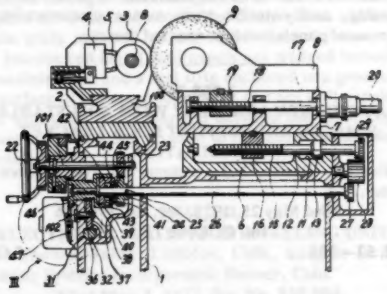
grinding region. A loading rail is vertically movable from a loading position wherein a plurality of workpieces can be disposed thereon, to an unloading position wherein the loading rail is aligned with the inlet guide. A reciprocal pushing device is substantially aligned with the loading rail when in its unloading position for causing the workpieces thereon to be pushed through the inlet guide passage and into the grinding region for engagement by the grinding wheels. Suitable retarding and holding structures are associated with the outlet guide for insuring that the workpieces remain closely adjacent one another and for preventing the workpieces from moving backward into the grinding region after retraction of the pushing device.

3,768,213

GRINDING MACHINE WITH A FEED CONTROL DEVICE

Hiroaki Asano, Chiryu, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Aichi-ken, Japan

Filed Mar. 20, 1972, Ser. No. 236,477
Int. Cl. B24b *49/00*
U.S. Cl. 51—165.78 **11 Claims**



In a grinding machine having a feed control device in which a first feed means is connected to a wheel support for performing grinding operations, a first grinding operation by the first feed means is controlled by a gauging member, and an advanced position thereof is memorized by a memory device. A second feed means is connected to the wheel support for compensating the same by a half of the difference in the diameters of a workpiece portion to be ground in the first grinding operation and of a second workpiece portion to be ground in a second grinding operation. The second grinding operation is controlled by a detecting means, whereby the first feed means is caused to be retracted when the first feed means comes up to the position memorized by the memory means in the first grinding operation.

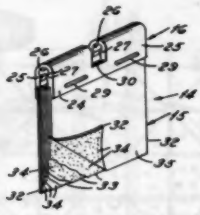
3,768,214

FINISHING WHEEL AND PACKS THEREFOR

James A. Belanger, Livonia, Mich., assignor to Belanger, Inc., Northville, Mich.

Continuation-in-part of Ser. No. 155,733, June 23, 1971, and a continuation-in-part of Ser. No. 885,734, Dec. 17, 1969, Pat. No. 3,685,217. This application May 15, 1972, Ser. No. 253,236
Int. Cl. B24d *11/00*; B24b *9/02*
U.S. Cl. 51—332 **8 Claims**

The rotary flap wheel has a plurality of radially extending finishing units mounted in a circumferential series on a rotary hub structure. The finishing units on the hub structure may be all abrasive type finishing packs or abrasive finishing packs used in combination with finishing units or packs of other materials as an example, sisal or cotton. Each finishing pack provided with abrasive working surfaces includes a stack of abrasive sheets clamped at their inner radial ends between the arms of a clamping element or clip, which is mounted on the hub structure by an elongated pin located adjacent the outer periphery of the hub structure. Each abrasive finishing pack has a leading sheet, a trailing sheet, and a plurality of intermediate sheets between the leading and trailing sheets, with the sheets having a relatively abrasive surface on one circumferential side thereof and a relatively non-abrasive or smooth-faced surface on the opposite side thereof. The leading sheet of each abrasive finishing pack has the abrasive surface



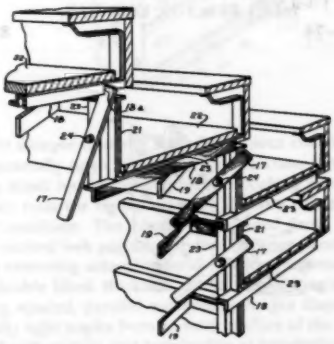
thereon disposed to face opposite to the direction of rotation of the hub structure, with the intermediate and trailing sheets of each abrasive finishing pack having the abrasive surfaces thereon facing uniformly in the direction of rotation of the hub structure. Thus, the non-abrasive or smooth-faced external surface of the leading sheet of each abrasive finishing pack engages a non-abrasive or smooth-faced surface on the trailing side of the finishing unit located forwardly thereof in the direction of rotation of the hub structure.

3,768,215

TELESCOPING ROW LOCKS

David W. Raymond, Champaign, and Robert E. Quigley, Mahomet, both of Ill., assignors to American Seating Company, Grand Rapids, Mich.

Filed Dec. 17, 1971, Ser. No. 209,157
Int. Cl. E04h *3/12*
U.S. Cl. 52—9 **6 Claims**



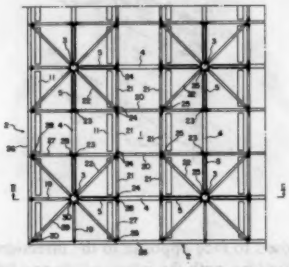
In a telescoping stepped row structure, a lock lever on one row is weighted to swing normally into engagement with the end of a stop bar on a preceding row frame as the rows are extended so as to secure the rows firmly in extended position, while an elongated wedge tripper on a preceding row extending at an angle to the lock lever engages the lever as the rows are contracted to move the lever laterally into unlocked position.

3,768,216

ROOF SUPPORTING CONSTRUCTION

Gorou Shirota, Takarazuka; Hiroshi Imanishi, Osaka; Naoya Shibatsuji, Kobe; Isamu Nakayama, Nishinomiya, and Masatoshi Ueda, Ibaraki, all of Japan, assignors to Kabushiki Kaisha Takenaka Komuten, Osaka-shi, Japan

Filed Sept. 8, 1972, Ser. No. 287,356
Claims priority, application Japan, Sept. 13, 1971, 46/8310
Int. Cl. E04b 7/14, 1/342
U.S. Cl. 52—73 9 Claims



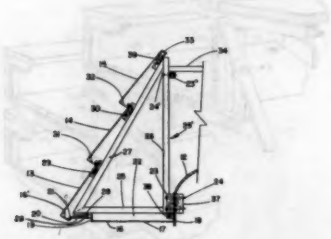
Roof supporting construction comprising four vertical posts arranged in square each other, four continuous beams connecting adjacent posts each other, eight rigid supporting members connected at one end to the post and at the other end to the continuous beams to hang-support the continuous beams and horizontal roof constituent member located nearby the continuous beams and supported mainly by the continuous beams.

3,768,217

BUILDING CORNICE WITH ONE PIECE SOFFIT AND GUTTER

Raymond K. Tyson, 802 St. Clair Ct., Apt. C, Indianapolis, Ind.

Filed Nov. 10, 1971, Ser. No. 197,224
Int. Cl. E04c 1/39; E04b 7/18
U.S. Cl. 52—74 8 Claims



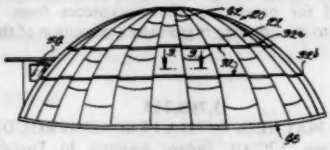
A cornice assembly mountable atop a mobile building with the assembly having a one piece soffit and gutter. The assembly has a plurality of triangular shaped forms spaced around and mounted to the building. Each form has a upwardly sloping bar with panels mounted externally thereto. Each form has a horizontally extending bar with the one piece soffit and gutter depending therefrom. Each form has a vertical bar mounted to the building. A plurality of tubes and cross struts interconnect the vertical bars of the forms and brace the assembly.

3,768,218

BUILDING CONSTRUCTION

John F. Blaski, 1844 Miner St., Des Plaines, Ill.

Filed May 20, 1971, Ser. No. 145,277
Int. Cl. E04b 1/32, 7/08
U.S. Cl. 52—81 3 Claims



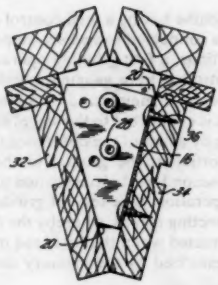
The domed building construction comprises a plurality of tapered, inwardly-bowed panels which are interconnected in end-to-end relationship to form tapered, vertically upwardly and radially inwardly extending outwardly-concave, troughlike rows. The rows are interconnected in side-by-side relationship, and exterior truss means circumscribes the joined rows of panels and is connected thereto.

3,768,219

BAY WINDOW ASSEMBLY WITH ADJUSTABLE SPACING AND SUPPORT LOCK BRACKET COMBINATION

Fred Reuten, Closter, N.J., assignor to Fred Reuten Inc., Closter, N.J.

Filed May 25, 1972, Ser. No. 256,986
Int. Cl. E06b 1/38
U.S. Cl. 52—201 5 Claims



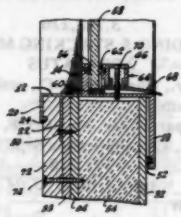
A spacing and support bracket combination selectably lockable at a plurality of angles, comprising: a first bracket of substantially L-shaped cross section, said first bracket having a major flange and a minor flange, said major flange including means for attachment to a constructional surface, and said minor flange including means for attachment to a bracket surface at any of a plurality of relative angles; and a second bracket of substantially L-shaped cross section, said second bracket being substantially identical to said first bracket, wherein the minor flange of said second bracket is securable to the minor flange of said first bracket at any of a plurality of relative angles, said relative angles being defined by the particular angle between the planes of said major flanges of said first and second brackets, whereby any two constructional surfaces may be joined at any of said plurality of angles by the securing of said minor flanges to each other at the desired relative angle and by securing said two major flanges to adjacent constructional surfaces.

3,768,220

METAL WINDOW SUB-FRAME AND WALL STRUCTURE

Harry M. Riegelman, Jr., Fullerton, Calif., assignor to Rusco Industries, Inc., Los Angeles, Calif.

Filed Mar. 22, 1971, Ser. No. 126,657
Int. Cl. E06 *1/14*
U.S. Cl. 52—208 1 Claim



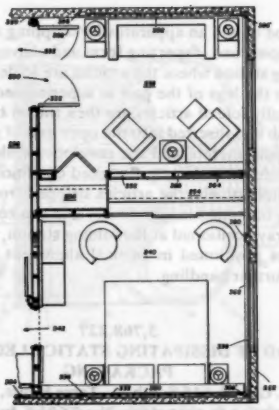
A metal frame member is formed of a flat base plate having a window supporting plate extending from its inner surface intermediate its edges. Extending from the outer surface of the base plate are inner and outer edge flange plates and an intermediate plate adjacent to and wider than the inner flange plate. Interlocked metal wall panels are wedged between the intermediate plate and a seal strip anchored in a groove in the inner surface of the outer edge plate, and dry wall panels, positioned with their edges inserted between the inner edge and intermediate plates, are secured to the intermediate plate and the panels.

3,768,221

ELECTRICAL SYSTEM FOR DWELLING UNITS

Walter Thomas Fuller, Littleton, Colo., assignor to Marcor Housing Systems Incorporated, Denver, Colo.

Filed Mar. 1, 1972, Ser. No. 230,804
Int. Cl. E04b *5/48*
U.S. Cl. 52—221 12 Claims



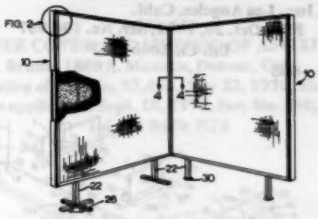
In a dwelling construction system, a multi-story, multi-family building comprises prestressed concrete pallets which are supported between load bearing walls to form the floors and the ceilings of individual dwellings. Each dwelling includes a service core comprising an enclosure formed on one of the pallets and complete mechanicals for the dwelling. The service cores are fabricated by mass production techniques and are subsequently transported to the building site for installation. In some instances the service core comprises a complete dwelling, in which case the enclosure of the service core may form the exterior walls and the roof of the dwelling.

3,768,222

PARTITION DEVICE

Herbert La Mont Birum, Jr., Pleasant Valley, Titusville, N.J.

Filed Oct. 12, 1971, Ser. No. 188,290
Int. Cl. A47g *5/00*
U.S. Cl. 52—239 7 Claims



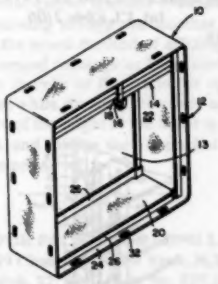
This invention relates to a privacy screen comprising a screen panel having a perimeter edge surface between opposed facia surfaces; a perimeter moulding having a channel extending longitudinally thereof; said channel of said perimeter moulding having a longitudinally extending seat and a locking shoulder underlying said seat at each side of said channel.

3,768,223

FIRE DAMPER FRAMES

John C. Kurz, Philadelphia, Pa., assignor to Advanced Air Inc., Philadelphia, Pa.

Filed Aug. 20, 1971, Ser. No. 173,596
Int. Cl. F23l *13/10*
U.S. Cl. 52—658 2 Claims



A fire damper frame of folded one piece construction having a centrally open transverse cross section formed from a unitary blank having cooperable interlocking means adjacent opposite ends for rigidly securing the fire damper frame in folded condition. The blank, in unfolded form, has a main planar central web portion disposed between parallel, longitudinally extending side peripheral mounting regions of substantially double blank thickness, and a pair of longitudinally extending, spaced, parallel upstanding flanges disposed at substantially right angles from an inner surface of the main planar central web portion and terminating at longitudinally extending outer edges. Each flange includes longitudinally spaced relief regions defining separate flange sections, each relief region in one flange being in transverse alignment with a corresponding region in the other flange. Each relief region comprises a slit extending from the outer edge of its respective flange in an inward direction for substantially the entire outward extent of the flange, and a portion of at least one of the flange sections adjacent each slit is disposed transversely out of the general plane of the longitudinally extending flange. Adjacent flange sections of each respective flange overlap to form frame corners when the frame is folded through the relief

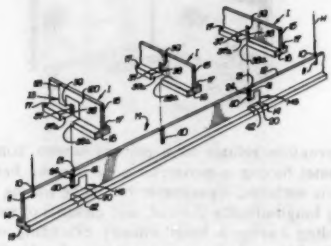
regions transverse to the elongate dimension of the blank to form a substantially continuous peripherally extending channel.

3,768,224

CEILING GRID SYSTEM WITH INTERLOCKED JOINTS

Rolando T. Curtis, Los Angeles, Calif., assignor to Integrated Ceilings, Inc., Los Angeles, Calif.

Filed Oct. 20, 1971, Ser. No. 190,957
Int. Cl. E04b *5/62*
U.S. Cl. 52—668 **2 Claims**



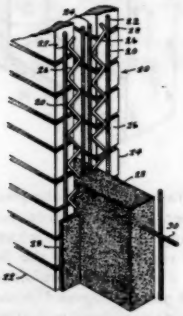
A sub-ceiling grid system in which the splices or joints in the main and intersecting runners are interlocked on assembly without the use of clips.

3,768,225

METHOD OF PRECASTING A MASONRY WALL PANEL

Mangum W. Sloan, 2836 Sunset Dr., Charlotte, N.C.

Continuation of Ser. No. 70,431, Sept. 8, 1970, abandoned, which is a division of Ser. No. 718,405, April 3, 1968, Pat. No. 3,530,632. This application June 21, 1972, Ser. No. 264,740
Int. Cl. E04c *2/06*
U.S. Cl. 52—743 **13 Claims**



A method of precasting a masonry wall panel having a pair of spaced wythes of masonry units bonded together by a concrete core, with each wythe having metal rod reinforcing lattices partially embedded in mortar between the masonry wall units and projecting into the concrete core. The method includes first precasting each of the wythes by arranging masonry units in a bed and applying mortar between the masonry units with metal rod reinforcing lattices positioned in the mortar in projecting disposition, and then positioning these precast wythes in spaced face-to-face relation with concrete therebetween to form the core that bonds the wythes together and embeds the projecting lattices in the core.

ERRATUM

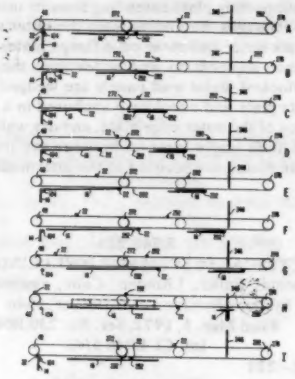
For Class 52—758 see:
Patent No. 3,768,846

3,768,226

FLAT FOLDING & STACKING METHOD AND APPARATUS

John W. Glaze, Jr., Charlotte, N.C., assignor to Intech Corporation, Charlotte, N.C.

Continuation-in-part of Ser. No. 66,338, Aug. 24, 1970, Pat. No. 3,704,565. This application Sept. 2, 1971, Ser. No. 177,228
Int. Cl. B65b *63/04*
U.S. Cl. 53—21 FW **14 Claims**



A method of and an apparatus for stripping a pair of hosiery from a shaping and inspecting form and conveying the hosiery to a folding station where the articles are folded longitudinally to position the legs of the pair in superimposed relation. The longitudinally folded articles are then folded transversely to a fixed length and inserted into the open end of an envelope fed from a supply thereof and the envelopes sealed to retain the folded articles in a smooth, flattened condition within the envelope. Alternatively, the articles stripped from the boarding forms may be folded longitudinally and stacked in a vertically movable tray positioned at the folding station, with one end of the articles positioned in vertical alignment in the stack to facilitate further handling.

3,768,227

METHOD OF DISSIPATING STATIC ELECTRICITY IN PACKAGING

Richard T. Grisell, 615 S. 6th St., Terre Haute, Ind.

Continuation-in-part of Ser. No. 51,014, June 29, 1970, abandoned. This application Sept. 16, 1970, Ser. No. 72,865
Int. Cl. B65b *61/00*
U.S. Cl. 53—36 **5 Claims**

A method for the dissipation of, or for preventing the accumulation of, a static charge of electricity resulting from friction between two contacting materials comprising the steps of positioning an electrical conductor having two or more ends, or a plurality of said conductors, between said contacting materials and connecting one end of said conductor to the positive pole of an e.m.f. source and connecting the negative pole of the e.m.f. source to the ground.

3,768,228

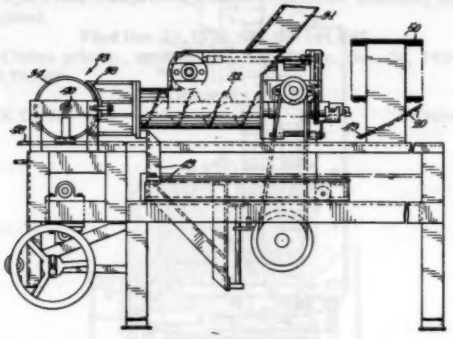
BUTTER PATTY PRINTER AND PACKAGING APPARATUS

Henry H. Doering, Jr., Hinsdale, Ill., assignor to C. Doering & Son, Inc., Chicago, Ill.

Continuation of Ser. No. 888,186, Nov. 26, 1969, abandoned. This application Oct. 27, 1971, Ser. No. 193,081

Int. Cl. B65b *5/04, 63/02*

U.S. Cl. 53—122 **2 Claims**



Method and apparatus for converting bulk butter and the like into individual service patties, for sealing each pat in a totally enclosed sanitary server, and for packing the individual services compactly in containers.

3,768,229

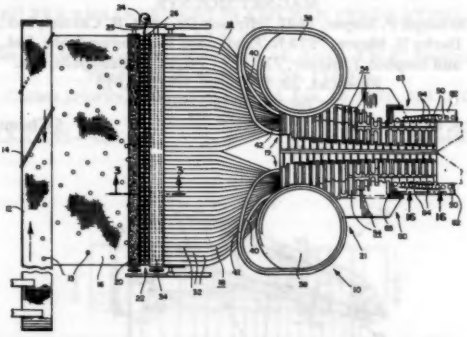
WAFER PACKAGING APPARATUS

Charles Frederick Bross, and William John Ponzetti, both of Chicago, Ill., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Dec. 17, 1971, Ser. No. 209,152

Int. Cl. B65b *35/32, 5/06*

U.S. Cl. 53—159 **11 Claims**



A work station has a trough formed in the surface thereof, contoured for receiving an open-ended tubular container, and a stack of disc-like articles. The container and the articles are deposited into the trough while the work station is in a substantially horizontal plane, one end of the stack being located adjacent the open end of the container, the container and the stack being co-axially aligned. The work station is conveyed toward a discharge zone while one end thereof is simultaneously elevated so as to raise the closed end of the container above the open end thereof; a plunger simultaneously pushes against the other end of the stack so as to move the latter upwardly across the work station against gravity, and into the container. When the stack is completely inserted into the container, one end portion of the work station is uprighted as the latter reaches the discharge zone to allow the loaded container to be vertically deposited at the discharge zone with the open-end facing upwardly. A retainer holds the container onto the work station during the loading operation until reaching the discharge zone.

3,768,230

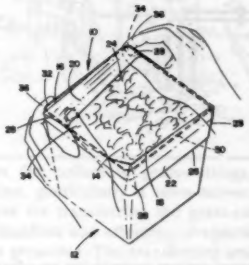
CONTAINER COVER AND METHOD OF AFFIXING SAME

Edward C. Bruno, 1880 S. Monaco, Denver, Colo.

Continuation of Ser. No. 57,456, July 23, 1970, abandoned. This application Sept. 18, 1972, Ser. No. 290,997

Int. Cl. B65b *7/28*

U.S. Cl. 53—38 **2 Claims**



This invention relates to a flexible and preferably transparent protective cover for small boxes or cartons of the type customarily used to package fruits and vegetables that comprises a generally rectangular sheet of stretchable material like polyethylene formed to provide a pair of pockets on opposite faces of the sheet that extend laterally from side-to-side along both ends while opening toward one another. The invention also encompasses the novel method of affixing the protective cover to an open-topped rectangular berry carton which comprises inserting the thumbs or fingers in the opposite corners of the upper pocket while drawing the cover across the top of the carton until one of the edges of the latter is received within the bottom pocket, and folding the top pocket inside out over the opposite carton edge.

3,768,231

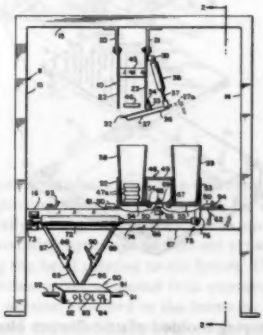
MACHINE FOR PACKAGING LONG LENGTHS

George Koslow, 149 Church St., New York, N.Y.

Filed Feb. 17, 1972, Ser. No. 227,124

Int. Cl. B65b *57/10*

U.S. Cl. 53—59 R **14 Claims**



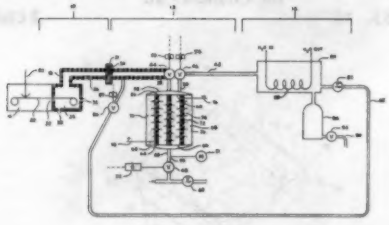
A packaging machine is provided for the automatic stacking or grouping of long relatively narrow lengths or strips of

material, preferably in a box or other receptacle so that the lengths are stacked and boxed in a single operation.

3,768,232
SOLVENT RECOVERY SYSTEM

Milton Farber, San Marino; Albert F. Bush, Northridge, and Franklin J. Wiens, Santa Monica, all of Calif., assignors to Republic Corporation, Century City, Calif.

Filed Jan. 6, 1972, Ser. No. 215,812
Int. Cl. B01d *53/4*
U.S. Cl. 55—58 21 Claims

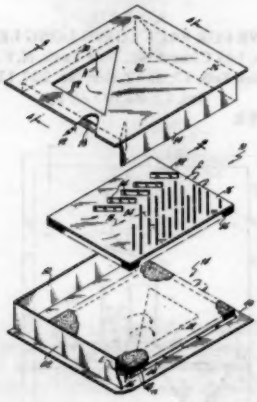


A solvent recovery system comprising an adsorbent bed for stripping the solvent from an air stream and a vacuum distillation and condensation unit for desorbing the solvent from the bed and recovering the solvent for reuse and regenerating the bed for the next adsorption cycle.

3,768,233
FILTER CONSTRUCTION

Jean F. Mateson, 9201 Shore Rd., Brooklyn, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,026
Int. Cl. B03c *1/02*
U.S. Cl. 55—100 9 Claims

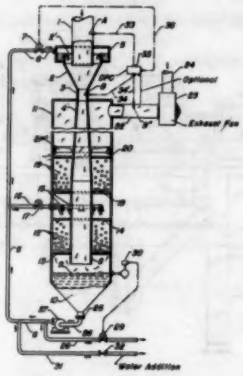


A filter employing molded plastic fibrous elements which may be impregnated with magnetic metallic particles. The fibrous elements are integrally molded as part of a two piece assembly which may be easily taken apart for cleaning and reassembled.

3,768,234
VENTURI SCRUBBER SYSTEM INCLUDING CONTROL OF LIQUID FLOW RESPONSIVE TO GAS FLOW RATE

Leslie C. Hardison, Norwalk, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 17, 1969, Ser. No. 885,901
Int. Cl. B01d *47/10*
U.S. Cl. 55—223 2 Claims

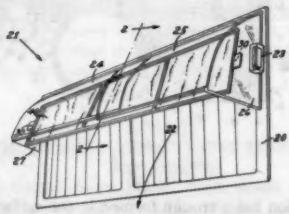


In combination with a scrubber system which includes a venturi throat section for mixing a liquid with a laden gas stream, there are provided pressure measurement means in the flow path of the gas stream to provide a pressure drop measurement which shows an equivalent to pressure change across the venturi throat section. The system then effects, through differential pressure control means, an immediate change in liquid flow rate to such throat section responsive to the change in pressure drop such that a substantially constant pressure differential is maintained across the venturi and a resulting constant efficiency retained.

3,768,235
AIR FILTER AND DEFLECTOR WITH ENCLOSED MAGNET MOUNTS

Christoph P. Meyer, 1441 Jefferson Dr., Apt. B, Carmel, Ind.; Darby N. Meyer, 7970 N. Englewood Rd., Indianapolis, Ind., and Stephen T. Meyer, 725 E. 111th St., Indianapolis, Ind.

Filed Oct. 20, 1971, Ser. No. 190,913
Int. Cl. B01d *27/08*
U.S. Cl. 55—385 5 Claims



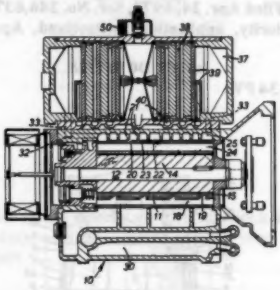
An air filter and deflector which is mountable adjacent to an air register. The deflector has a main body with a curved air deflecting wall integrally connected to a pair of side walls having magnets secured thereto for the mounting of the deflector. The curved wall is adjustable so as to change the length of the deflector. The curved wall has a pair of curved walls slidably mounted together with the longitudinally extending edges of one of the curved walls being received in slots formed by the outwardly turned edges of the other curved wall. A filter

frame having a filter material mounted thereto is secured within the deflector to the side walls thereof. The frame has first and second frame members telescopically connected together. A pair of guides are mounted on one end of one of the frames and slidably receives the edges of the other frame.

3,768,236
COMPRESSORS

Peter John Rudge, Redditch, England, assignor to The Hydrovane Compressor Company, Limited, Redditch, England

Filed Dec. 23, 1970, Ser. No. 101,087
Claims priority, application Great Britain, Dec. 24, 1969, 62,795/69
Int. Cl. B01d *46/10*
U.S. Cl. 55—438 **5 Claims**

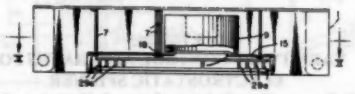


In a compressor of eccentric vane type having means for separating oil from compressed air, the oil-laden air from the cylinder enters the centre of a primary separation chamber and flows in two streams towards opposite ends, spreading out and following a sinuous path.

3,768,237
FILTER ARRANGEMENT IN KITCHEN VENTILATING SYSTEM

Nils Randolf Bergmark, Ringvagen 14, Byske, 930 47 Sweden

Filed Jan. 29, 1971, Ser. No. 111,011
Claims priority, application Sweden, Jan. 30, 1970, 1217/70
Int. Cl. B01d *45/08*
U.S. Cl. 55—439 **2 Claims**

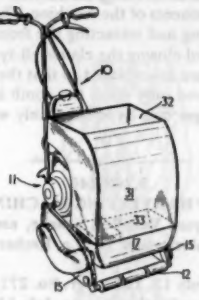


A kitchen ventilator having a ventilator hood in which is located a fan in a fan housing. The bottom of the fan housing is horizontal and removable and forms the upper portion of a slab-like grease separator unit. The bottom of the separator unit also forms the bottom of the ventilator hood. The grease separating means are formed by vertical posts, vanes or walls formed integrally with the separator unit upper portion and cooperating with the separator unit bottom to repeatedly alter the air flow direction either horizontally or vertically. The entire filter unit may be removed and folded open for cleaning, thereby also leaving the fan housing open for cleaning.

3,768,238
EQUIPMENT FOR COLLECTING GRASS-CUTTINGS FROM A GRASS-MOWER

John Douglas Snow, Nuneaton, England, assignor to MacLaren Snow Limited, London, England

Filed Sept. 29, 1971, Ser. No. 184,777
Int. Cl. A01d *35/22, 53/06*
U.S. Cl. 56—199 **10 Claims**

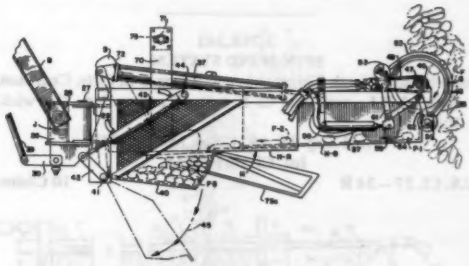


A grass-box for collecting grass-cuttings from a grass-cutting machine, particularly a lawn-mower, and provided with equipment for transferring the grass-cuttings from the cutter of the machine and effecting compaction of the grass-cuttings in the grass-box. The transferring and compaction of the grass-cuttings is effected by an auger conveyor which is mounted with its longitudinal axis extending transversely of the grass-box to receive along substantially the whole of its length grass-cuttings as they are ejected by the cutter.

3,768,239
FRUIT PICKER

Louis T. Staats, Sr., 1032 Minnehaha Avenue, Clermont, and Fred H. Adkinson, P.O. Box 158, Minneola, both of Fla.

Filed Jan. 20, 1972, Ser. No. 219,447
Int. Cl. A01g *19/00*
U.S. Cl. 56—328 R **14 Claims**



A fruit picker head is mounted by a universal-type joint on a movable supporting boom so that it may be vertically tilted and horizontally swung independently of movement of the boom. Reciprocating hydraulic motors are provided for swinging and tilting the head relative to the boom. The picker head comprises a telescoping sectional fruit containing receptacle having a rear portion attached to the boom by the joint and a projectable and retractable front portion equipped with a clamshell-type comb which opens and closes around a rotary auger to gather fruit when the fruit receptacle portion is projected into and retracted from tree branches. Separate motors are provided for actuating the clamshell-type comb and the

rotary auger. A self leveling operator's seat is supported at one side of the picker head and controls are provided at the seat for controlling the motors which actuate various components of the machine. Separate motors are provided for projecting and retracting the front receptacle portion relative to the rear portion, for opening and closing said claimshell-type comb, and for rotating said auger. A self-leveling operator's seat is supported at one side of the picker head and controls are provided at the seat for controlling the various motors which actuate various components of the machine. The controls for the motors for projecting and retracting the front receptacle portion, for opening and closing the clamshell-type comb, and for rotating the auger are interrelated so that the front receptacle portion can be moved only when the comb is fully opened or closed, and the auger can be rotated only when the comb is closed.

3,768,240

CROP HARVESTING MACHINES

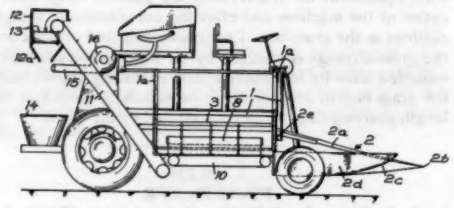
Claude Bernard Lyon, Venelles, France, assignor to Agence Nationale De Valorisation De La Recherche A.N.V.A.R., Paris, France

Filed July 12, 1972, Ser. No. 271,050

Claims priority, application France, July 13, 1971, 7125671

Int. Cl. A01g *19/00*

U.S. Cl. 56—330 **9 Claims**



A harvesting machine for harvesting fruits growing on plants having flexible stems and planted in rows, the machine comprising means for inclining and keeping inclined in at least one row said plants; a plurality of rotary threshers disposed above said row; and also comprising below said row means for recovering and transferring the fruits to a receiving tank.

3,768,241

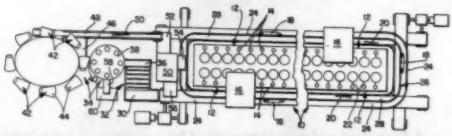
SPIN-WIND SYSTEM

John Nelson, North Kingstown, and Thomas E. Pitts, Cranston, both of R.I., assignors to Leesona Corporation, Warwick, R.I.

Filed Aug. 16, 1971, Ser. No. 171,945

Int. Cl. D01h *9/18*

U.S. Cl. 57—34 R **10 Claims**



An automatic yarn twisting or spinning and rewinding system has at least one spinning frame with opposite banks of spinning stations. A pair of tenders, one for each of the banks, is provided for patrolling the stations and servicing any of the stations requiring attention. Upon stopping at a station requiring servicing, the tender doffs the bobbin (supply unit) at the station and donns an empty bobbin and starts the strand winding onto the empty bobbin. Thus there is a continuous supply of filled bobbins. The filled bobbins are conveyed to a readier of a winding machine at an end of the spinning frame or frames and, responsive to demand of the winding machine, the filled bobbins are deposited in the readier where they are suitably processed and then delivered to winding stations of the winding machine. The system is regulated so that the winding machine continuously uses the filled bobbins at substantially the same rate at which they are doffed from the spinning frame. After the yarn on the bobbins has been wound onto packages the bobbins may be ejected from the winding machine and are transferred back to a tender which thereupon donns the empty bobbins, as required, at the spinning stations.

3,768,242

SPINDLE FOR DRAW-TWISTING MACHINES

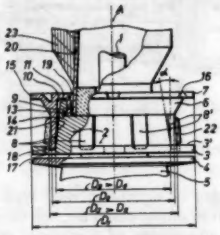
Kurt Angst, Wangi, and Paul Scheurer, Winterthur, both of Switzerland, assignors to Rieter Machine Works Limited, Winterthur, Switzerland

Filed Apr. 24, 1972, Ser. No. 246,637

Claims priority, application Switzerland, Apr. 29, 1971, 6305/71

Int. Cl. D01h *1/38*

U.S. Cl. 57—34 PW **22 Claims**



A spindle, particularly for draw-twisting machines, designed for taking-up a detachable underwinding crown which can be placed on the spindle so that no rotation relative to the spindle occurs. The underwinding crown is provided with vertically arranged fingers or rods forming envelope parts for taking up a thread during the underwinding phase and with an upper limiting ring surrounding a tube of a bobbin placed on the spindle. The outside diameter of the ring exceeds the envelope parts. The spindle is designed for taking-up the upper limiting ring of the underwinding crown which is provided with elastic snap-on holding means, and is further provided with spreading means for spreading the elastically deformable envelope parts. There is also provided a lower limiting ring the outside diameter of which exceeds the envelope parts and which contains at least one recess for taking-up the free lower ends of the fingers or rods forming the envelope parts.

3,768,243

YARN TWIST CONTROL APPARATUS FOR ELECTROSTATIC SPINNER

Roger S. Brown, New Orleans; James I. Kotter, and Harold L. Salaun, Jr., both of Metairie, all of La., assignors to The United States of America as represented by the Department of Agriculture, Washington, D.C.

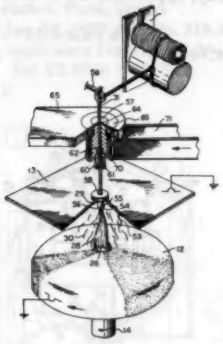
Continuation-in-part of Ser. No. 132,952, April 12, 1971, Pat. No. 3,696,603. This application Mar. 28, 1972, Ser. No. 238,867

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.89 **7 Claims**

This invention relates to an apparatus for controlling the amount of twist inserted into yarns in the fiber assembly area of an electrostatic yarn spinning apparatus, providing a means whereby any portion of the final twist can be inserted as fibers are being consolidated for yarn formation.

The invention also provides a means for effecting untwist to a coring yarn prior to electrostatic spinning of surface fibers circumferentially about said coring yarn and allowing return



of normal twist in the coring yarn to interlock spun surface fibers to produce a mechanically bonded core yarn of dissimilar materials.

3,768,244

RING RAIL LIFTING APPARATUS FOR SPINNING MACHINERY

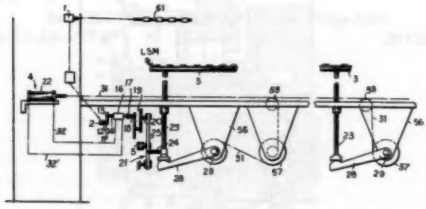
Shunichi Yasutomi, Kobe; Shigeaki Takahashi, Amagasaki, and Katsumasa Nerio, Itami, all of Japan, assignors to Nihon Spindle Seizo Kabushiki Kaisha, Hyogo-ken, Japan

Filed Dec. 22, 1971, Ser. No. 210,821

Claims priority, application Japan, Dec. 30, 1970, 45/129354

Int. Cl. D01h *1/24, 1/26, 1/36*

U.S. Cl. 57—98 **8 Claims**



A ring rail lifting apparatus for spinning machinery, including a pulse generating device for generating pulses according to the rotation speed of the frame motor of a spinning machine without receiving power from the frame, and a pulse motor operated by the pulses supplied from said pulse generating device. The driving mechanism operated by said pulse motor is arranged so as to give vertical motion to the ring rail, and this motion is controlled by an interlocking device interlocked with the ring rail.

3,768,245

CRIMPING SLUB FILAMENTS OF THERMOPLASTIC POLYMERS

James William Braker, Exhall, Coventry, England, assignor to Courtaulds Limited, London, England

Filed Oct. 30, 1970, Ser. No. 85,621

Claims priority, application Great Britain, Nov. 21, 1969, 57107/69

Int. Cl. D02g *3/34, 3/38*

U.S. Cl. 57—140 BY **3 Claims**

This invention relates to a crimped yarn having slubs which comprises one or more thermoplastic slub filaments and one or more thermoplastic drawn filaments of uniform denier which have been false-twist crimped together. The invention also relates to a process for false-twist crimping such a composite yarn.

3,768,246

SPUN YARN AND ITS DOUBLED YARN AND THE PROCESS FOR MANUFACTURING THE SAME

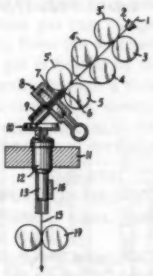
Masaaki Tabata; Kozo Susami, and Hiroshi Edagawa, all of Otsu-shi, Japan, assignors to Toray Industries, Inc.

Division of Ser. No. 691,056, Dec. 15, 1967, Pat. No. 3,501,907. This application Dec. 24, 1969, Ser. No. 888,093

Claims priority, application Japan, Dec. 20, 1966, 41/8298; July 12, 1967, 42/44377

Int. Cl. D01h *1/12*

U.S. Cl. 57—156 **2 Claims**



A method for producing spun yarn in an open-end spinning system having a rotary open-ended spinning chamber comprises feeding a bundle of fibers to the open-ended spinning chamber, rotating the open-ended spinning chamber at a peripheral surface speed V to successively accumulate superimposed layers of fibers upon the peripheral surface of the spinning chamber, withdrawing the accumulated fiber layers from the rotating open-ended spinning chamber in the form of spun yarn at a withdrawing speed W to self-double the spun yarn at a doubling number V/W, and selectively varying the speeds V and W to provide the spun yarn with a predetermined doubling number V/W during only a single passage through the open-end spinning system. The bundle of fibers is

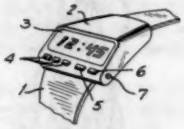
fed to the spinning chamber in a compressed air stream which transports the fibers in a mutually liberated condition to the open-ended spinning chamber.

3,768,247

CONTROL SWITCHES TO WATCH HAVING A DIGITAL DISPLAY

Kinji Fujita, Nagano-ken, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Feb. 1, 1972, Ser. No. 222,580
Claims priority, application Japan, Feb. 6, 1971, 46/4516
Int. Cl. G04c *3/00*; G04b *19/30*, *27/00*
U.S. Cl. 58—23 R 11 Claims



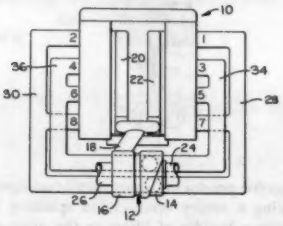
A watch wherein the high frequency signal produced by a quartz crystal oscillator is applied to a counter and decoder which produces driving signals for application to a digital display such as light emitting diodes, a liquid crystal display, or a plasma display. Functional push-button switches are provided for adjusting time, and for resetting the counter. The switches are preferably positioned on the upper or front side of the case and electronic or mechanical means are provided for locking said switches.

3,768,248

EXHAUST MANIFOLDING

William A. Grgurich, East Peoria, and Morris A. Swanson, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 27, 1971, Ser. No. 212,147
Int. Cl. F02b *37/04*
U.S. Cl. 60—13 16 Claims



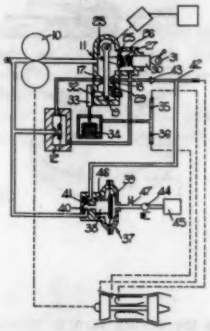
There is disclosed a unique manifold arrangement for turbocharged internal combustion engines having a multiple of four cylinders. The manifold system is arranged to provide even spacing between alternate sets of non-interfering cylinders to provide an even flow of exhaust to the branches of the manifold.

3,768,249

FUEL SUPPLY SYSTEMS FOR GAS TURBINE ENGINES

Geoffrey Arthur Lewis, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Feb. 10, 1972, Ser. No. 225,174
Claims priority, application Great Britain, Feb. 15, 1971, 4,624/71
Int. Cl. F02c *9/10*
U.S. Cl. 60—39.14 10 Claims



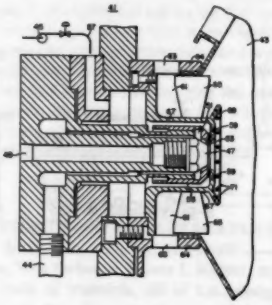
A fuel control system for a gas turbine engine includes an injection device which can be charged with fuel and which is operable when the engine is started to deliver this charge of fuel directly to the engine.

3,768,250

COMBUSTION APPARATUS FOR A GAS TURBINE

Katsuyuki Kawaguchi, Akashi, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1971, Ser. No. 203,670
Int. Cl. F02c *3/24*; B05b *7/10*
U.S. Cl. 60—39.74 R 6 Claims



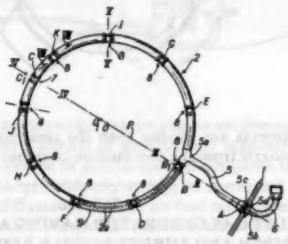
A gas turbine having a fuel nozzle which is encompassed by a plurality of annular plenum chambers which are supplied with pressurized fluid which is directed at an angle toward a fuel stream being sprayed into the combustion chamber from the fuel nozzle to atomize and disperse the fuel to promote more complete combustion and minimize smoke. A vent or a frustoconical baffle is also utilized to stabilize the combustion of the fuel during an ignition portion of the operating cycle of the turbine.

3,768,251

FIXING OF FUEL INJECTION MANIFOLDS INTO COMBUSTION CHAMBERS

Andre Alphonse Mederic Leon Camboulives, Billancourt, and Roger Alfred Jules Vandenbroucke, Antony, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Jan. 18, 1972, Ser. No. 218,811
Claims priority, application France, Jan. 19, 1971, 7101683
Int. Cl. F02c 7/20, 7/22
U.S. Cl. 60—39.32 10 Claims



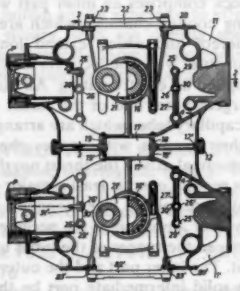
A device for securing within a combustion chamber an injection manifold which is connected to the wall of the said chamber by a pipe section preferably curved into a "swan-neck," said device comprising a linkage system connected to the manifold and to a reference structure such as a stabilizer in such a way as to permit the manifold to undergo displacement parallel to itself by maintaining two points on the manifold in an axial plane of the chamber that contains the point where the pipe section passes through the said wall. The linkage system may comprise two link rods contained within this plane and pivotally mounted about axes perpendicular to the said plane, and several pairs of further link rods pivotally attached by swivel or universal joints.

3,768,252

CYLINDER CRANKCASE ASSEMBLY FOR DUAL CRANKSHAFT MULTI-CYLINDER ENGINE

Hans-Joachim Kubisch; Richard Seifert, and Walter Thorn, all of Friedrichshafen, Germany, assignors to Motoren-und Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Germany

Filed Dec. 28, 1971, Ser. No. 213,094
Claims priority, application Germany, Jan. 9, 1971, P 21 00 899.1
Int. Cl. F01k 23/00; F02b 75/24; F01p 3/06
U.S. Cl. 60—97 R 20 Claims



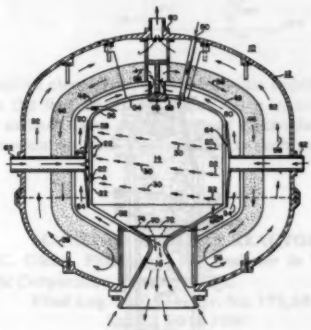
A multi-cylinder internal combustion engine which is assembled from two identical engines with an opposed piston-type arrangement and disposed symmetrically above one another, in which each of the two identical cylinder-crankcases are welded together from cast housing elements adjoined in a building-block-like manner whereby the connection with each other of the two cylinder-crankcases takes place by way of flanged surfaces and the sides accessible from the top or bottom of the respective cylinder-crankcase is open for the installation of the crankshaft; the housing elements thereby include cross walls which are constructed for receiving the crankshaft main bearings and bifurcate Y-shaped in the direction toward the flanged surfaces for the other engine.

3,768,253

VORTEX RING NUCLEAR REACTOR

Donald W. Drawbaugh, Bethel Park, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 13, 1968, Ser. No. 728,473
Int. Cl. G21d ; H05b
U.S. Cl. 60—203 7 Claims



A fluidized core nuclear reactor particularly adapted for use as a rocket engine. A gas or colloidal suspension of fissionable material is supplied to a chamber into which a light propellant gas is injected at selected flow rates and angles so as to form a rotating ring vortex of the fissionable material. In addition, a region of solid fissionable material may be employed with the gaseous fissionable material. When so employed, the solid fissionable material surrounds the fluid filled chamber and is separated therefrom by a "neutron gate," a moderator and thermal neutron absorber, the latter allowing thermal neutrons to pass only into the fluid filled cavity. The thermal peaking thereby produced in the fluidized region causes the light propellant gas to fluidized fuel ratio to be increased so that the light propellant gas can "suspend" the heavier fissionable material away from the wall and outlet of the cavity. The light propellant gas is heated by the fissioning material and exits from the cavity through a thrust producing nozzle. Flow directing means cause some divergence of the flow path of the propellant material adjacent to the mouth of the nozzle further enhancing suspension of the fissioning material.

3,768,254

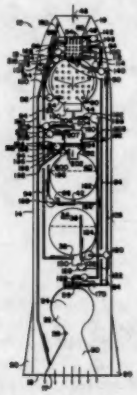
ROCKET PROPULSION METHOD AND MEANS

David O. Stuart, Wichita, Kans., assignor to The Boeing Company, Wichita, Kans.

Filed July 9, 1962, Ser. No. 208,416
Int. Cl. B63h 11/00
U.S. Cl. 60—204 15 Claims

15. A rocket comprising, in combination, a housing having an open inlet end portion and an outlet end portion, engine means mounted in said housing and having burner nozzles in a combustion chamber therein and an exhaust portion at said outlet end portion of said housing operable to discharge gases from said combustion chamber therethrough, a liquid hydrogen fuel storage tank positioned within said housing, a liquid air storage tank positioned within said housing, a heat exchanger mounted at said inlet portion of said housing and having an air inlet diffuser portion opening into a relatively narrow air desuperheater portion which in turn opens into an enlarged condenser portion, a plurality of tubes in said con-

denser portion and said air desuperheater portion of said heat exchanger, inlet headers with the inlet end of said tubes and outlet headers with the outlet end of said tubes, conduit means connected to said hydrogen fuel storage tank and connected to said inlet headers to pass liquid hydrogen fuel therethrough, control means with said last-named conduit means having pressure and temperature pickup means in said air desuperheater portion and said condenser portion of said heat exchanger to regulate flow of said fuel thereto to control pressure and temperature conditions in said air desuper-heater portion and said condenser portion of said heater exchanger, conduit means positioned to receive fuel from said outlet headers of said air desuperheater portion and supply said fuel to said burner nozzles in said rocket engine, hydrogen fuel recirculating conduit means connecting said outlet headers of



said tubes with the inlet of said hydrogen fuel storage tank, air condensate well means with said condenser portion of said heat exchanger, conduit means connecting said air condensate well with said liquid air storage tank and with said burner nozzles of said rocket engine, means with said liquid air storage tank to separate oxygen from the liquid air and make the same available to said burner nozzles to support combustion of the fuel, conduit means connecting said liquid air storage tank with said last-named means to provide liquid air from said liquid air storage tank thereto, and means in said rocket constructed and adapted to be initially fueled with liquid hydrogen and in flight to receive air from the atmosphere and condense same and separate the nitrogen therefrom to be used as the oxidizer for said hydrogen fuel for burning in said combustion chamber of said rocket engine.

3,768,255

INLET PORT COVERS FOR REACTION VEHICLE

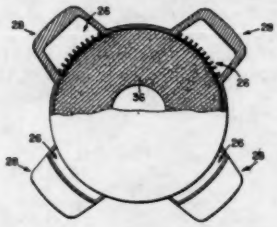
Vernon M. Barnes, Jr., and Gerald M. Eisenlohr, both of Richmond, Va., assignors to Texaco, Inc., New York, N.Y.

Filed Mar. 6, 1967, Ser. No. 621,402

Int. Cl. F02k *3/00*

U.S. Cl. 60—245 4 Claims

An ejectable ram air inlet port cover is provided which comprises a plurality of segments arranged in close fitting side-by-side relation. The segments each have one dimension greater than a corresponding dimension of the inlet port to thereby bridge the port and the number of segments is so selected that



the segments are smaller than the smallest dimension of the outlet nozzle from the combustion chamber.

3,768,256

THRUST GAS GENERATOR HAVING A COMBUSTION CHAMBER AND THRUST NOZZLE REGENERATIVELY COOLED BY A LIQUID

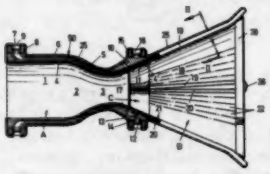
Karl Butter, Munich; Michael Kaufmann, Neubiberg, and Helmut Dederra, Ottobrunn, all of Germany, assignors to Messerschmitt-Bolkow-Blohm, Gesellschaft mit beschrankter Haftung, Ottobrunn, near Cologne, Germany

Filed Aug. 12, 1970, Ser. No. 63,168

Claims priority, application Germany, Aug. 14, 1969, P 19 41 296.5

Int. Cl. F92k *11/02*

U.S. Cl. 60—260 15 Claims



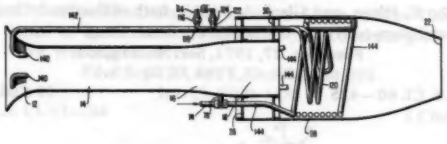
A thrust gas generator includes a combustion chamber and a nozzle including a converging portion terminating in a nozzle neck and a diverging outer portion extending from the neck to the thrust gas discharge. The combustion chamber proper and/or also the converging thrust nozzle part and the thrust nozzle neck comprises an inner part with a solid base wall body having cooling channels which are machined into the exterior thereof and which extend longitudinally and which include an outer wall which covers the cooling channels and which is applied by electroplating. An outer end part includes the divergent outer end of the thrust nozzle which is constructed of capillary tubes which are arranged at least over a portion of their lengths with spaces therebetween and around the longitudinal axis of the thrust nozzle and they have a constant cross section over at least a major portion of their length. A closed electroplated layer connects the tubes and it is applied firmly over a portion of the periphery of each tube and extends between the spaces of the tubes to bind the tubes into a single unit. The inner part and the outer parts are interconnected by a solid intermediate part by the electroplated layer which also covers and interconnects the tubes. The connection between the capillary tubes of the outer part and the longitudinally extending passages of the intermediate part is effected especially by soldering or welding of adjacent tube ends into the longitudinal passages in a mechanically strong and pressure-tight manner.

3,768,257

MOMENTUM COMPRESSION RAMJET ENGINE

Bruce H. Neuffer, Huntsville, Ala., assignor to Brown Engineering Company, Inc., Huntsville, Ala.

Filed Aug. 17, 1971, Ser. No. 172,417
Int. Cl. F02k *1/14*
U.S. Cl. 60—269 **9 Claims**



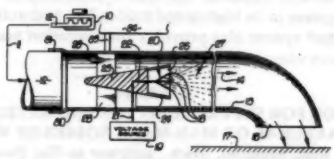
A momentum compression ramjet engine employing energy from a high velocity stream of gaseous fuel injected into the open inlet of the engine to accelerate and compress the air by momentum exchange. Velocity energy is converted to pressure energy in a diffuser before the air-fuel mixture enters the combustion chamber where the fuel burns to raise the temperature before the gas is expanded through a jet nozzle. Maximum thrust-to-engine weight ratio and performance characteristics are obtained by the configuration of the air-fuel mixing and compressing chamber of the engine, and novel means utilizing heat of combustion may be employed to maintain pressure in the fuel system.

3,768,258

POLLUTING FUME ABATEMENT APPARATUS

Harold W. Smith, San Marino, and Donald G. Saurenman, Whittier, both of Calif., assignors to Consan Pacific Incorporated, Whittier, Calif.

Filed May 13, 1971, Ser. No. 143,143
Int. Cl. F01n *3/00*
U.S. Cl. 60—275 **8 Claims**



Fume abatement apparatus comprises, in combination,

a. an exhaust duct for passing a stream of engine products of combustion having electrically chargeable content, and
b. means including an ion generator to effect a flow of ions into said stream, with ion density and polarity to so change the electrical charge of said content as to enhance subsequent precipitation thereof on a surface.

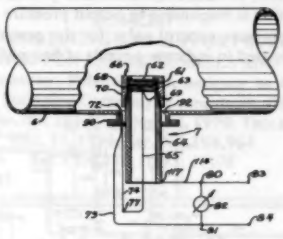
3,768,259

CONTROL FOR AN ENGINE SYSTEM

Robert D. Carnahan, Barrington; Karl J. Youtsey, Chicago, and David H. Spielberg, Schaumburg, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed July 6, 1971, Ser. No. 159,936
Int. Cl. F02b *75/10*; F01n *3/14*; G01n *27/46*
U.S. Cl. 60—276 **10 Claims**

A control system for an engine system which utilizes solid oxygen-ion electrolyte oxygen sensing means to generate an electrical signal responsive to the oxygen content of exhaust gases of the engine which in turn is used to control regulating means to vary the character of the exhaust gases issuing from the engine. In a preferred embodiment, the oxygen sensing means is disposed upstream from a catalytic reactor and this establishes means to control the nature of the gases entering such reactor in order to maximize the effect of said reactor. Specifically, the oxygen-ion electrolyte oxygen sensing means may comprise a first and second electrode means connected to the regulating means and spaced by a stabilized solid oxygen sensitive electrolyte, such as zirconia stabilized with calcia, with the first electrode means being in communication with the exhaust gases and the second electrode means being in communication with a reference gas such as atmospheric air.

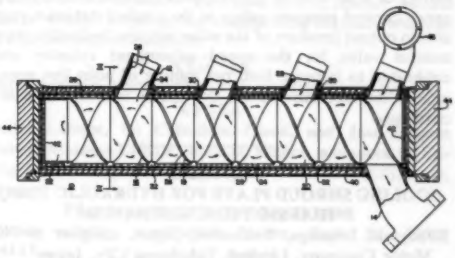


3,768,260

MANIFOLD THERMAL REACTOR

Robert G. Glenn, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 13, 1971, Ser. No. 171,684
Int. Cl. F01n *3/08*
U.S. Cl. 60—324 **9 Claims**



A manifold thermal reactor is disclosed having a twisted ribbon core forming a double helical flow path. The helix is positioned within the manifold so that the inlet ports all feed into the same continuous chamber, the end of the helix at the exhaust system port being closed while the opposite end of the helix is opened, whereby the gases entering the reactor travel in the same chamber to the open end of the helix where the gas flow is reversed, thereby causing the gases to enter the other chamber formed by the double helix which directs the flow of gases axially of the manifold to the exhaust system port.

3,768,261

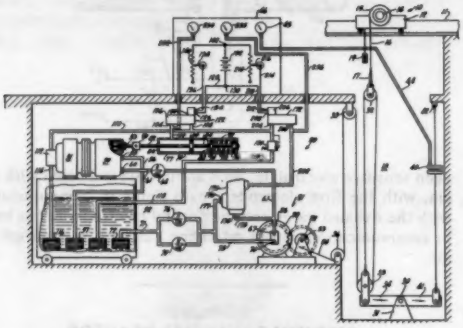
CONTROL SYSTEM FOR HOIST TESTING APPARATUS

Richard O. Gordon, deceased, late of Belgium, Wis. (by Lillian H. Gordon, executrix), assignor to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Nov. 6, 1972, Ser. No. 304,216
Int. Cl. F15b *19/00*
U.S. Cl. 60—328 **7 Claims**

A control system for apparatus for testing the rated load, speed and braking capabilities of a hoist. The hoist line is connected to a test which cable by a lever and pulley arrangement. A load cell responsive to lever movement and, there-

fore, the load imposed, provides a visual readout thereof at an operation control station. Load size is remotely adjustable from the control station by a load control rheostat which controls an electric-hydraulic pressure control valve which, in turn, adjusts the pressure relief setting of a pressure relief valve between a hydraulic winch motor and the hydraulic pump for that motor. A load control pressure gauge at the control station is responsive to output pressure of the electric-hydraulic pressure control valve for the pressure relief valve and is calibrated to indicate pounds of line pull or load which



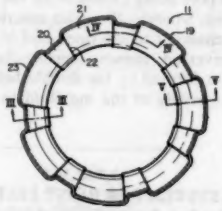
the hoist being tested can exert to enable the operator to set the load control rheostat accordingly. Load speed is remotely adjustable from the control station by a speed control rheostat which controls another electric-hydraulic pressure control valve which, in turn, operates a cylinder to adjust the speed setting of a servo-stem speed control device on the pump. A speed control pressure gauge at the control station is responsive to output pressure of the other electric-hydraulic pressure control valve for the speed adjustment cylinder and is calibrated to indicate feed per minute of hoist line speed to enable the operator to set the speed control rheostat accordingly.

3,768,262

COOLING SHROUD PLATE FOR HYDRAULIC TORQUE TRANSMITTING MECHANISM

Kazuyoshi Iwanaga, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Dec. 2, 1971, Ser. No. 204,162
Claims priority, application Japan, July 9, 1971, 46/60185
Int. Cl. F16h *41/30*
U.S. Cl. 60—337 3 Claims



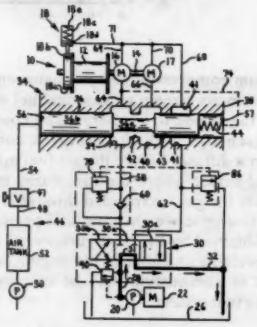
A cooling shroud plate for use in a hydraulic torque transmitting mechanism, consisting of an annular member having formed thereon a plurality of concave and convex portions which circumferentially alternate, a plurality of rib portions formed between the concave and convex portions and flange means formed on the annular member at the outer peripheral wall thereof. The concave portions serve as mounting elements for mounting the cooling shroud plate on the outer surface of the hydraulic torque transmitting mechanism, while the convex portions serve to provide cooling air flow passages through which the cooling air circulates to cool the outer surface of the torque transmitting mechanism.

3,768,263

HYDRAULIC CONTROL SYSTEM FOR TWO-SPEED WINCH

John E. Olson, and Glenn A. Waller, both of Portland, Oreg., assignors to Hyster Company, Portland, Oreg.

Filed Dec. 27, 1971, Ser. No. 212,357
Int. Cl. F16h *39/50*
U.S. Cl. 60—425 10 Claims



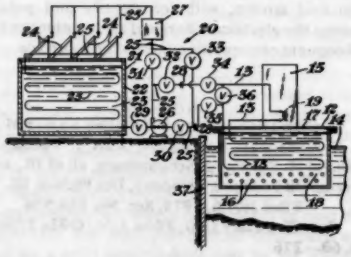
The hoisting winch of a mobile crane is driven by two hydraulic motors connected to a common drive shaft. A control system for the motors includes manually controlled directional and speed control valves. The speed control valve optionally connects the motor hydraulically either in parallel for low-speed, high-torque operation or in series for high-speed, low-torque operation. A speed-limiting feature automatically shifts the speed valve to or maintains it in its low-speed position whenever the load is too heavy to be handled by the system in its high-speed mode. The hydraulic circuit of the control system also provides anticavitation protection for the motors when in its high-speed mode.

3,768,264

METHOD FOR SUPPRESSING THE FORMATION OF ICE IN NATURAL OR MAN-MADE BODIES OF WATER

John S. Best, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 3, 1972, Ser. No. 268,468
Int. Cl. E02b *3/00*
U.S. Cl. 61—1 R 5 Claims



A method for suppressing the formation of ice in natural or man-made bodies of water such as lakes, rivers, sounds, straits, bays, shipping canals, shipping locks, harbors, and the like. The method is particularly useful in areas where ice breakers or the like cannot be efficiently operated. The method provides for direct replacement of heat lost to the at-

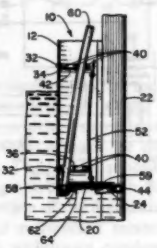
mosphere during the winter season by the use of heat transfer means such as permanent heat transfer apparatus located in and/or adjacent the sides of canals or rivers to prevent natural bridging of ice formations in the same or by the use of a traveling heat exchanger disposed in a barge, scow and the like.

3,768,265

COFFERDAM

Carl V. Brouillette, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 27, 1971, Ser. No. 184,092
Int. Cl. E02b *1/00*
U.S. Cl. 61—34 **5 Claims**



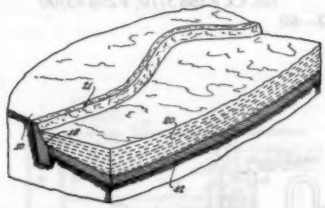
An improved cofferdam having an inflatable rubberized seal for use along the contact edge thereof. Such seal enables the cofferdam to uniformly fit in a watertight relationship wherever positioned across the face of a piling or other submerged structure.

3,768,266

SHORELINE CONSTRUCTION FOR ARTIFICIAL WATER BODIES

J. Harlan Glenn, Villa Park, Calif., assignor to Stabilization Chemicals, Anaheim, Calif.

Filed May 1, 1972, Ser. No. 249,192
Int. Cl. E02b *3/04*
U.S. Cl. 61—37 **12 Claims**



This invention relates to a method of constructing shorelines for artificial water bodies at a reasonable cost and which will, at the same time, be highly wave resistant and provide adequate seepage and erosion control of the shoreline.

The method comprises the excavation of a trench in the outline of the periphery of the desired shoreline. The trench may have a depth of about 4 feet and a width of about eight inches. An elongated pre-molded plastic section is then secured to the upper portion of the trench sidewall closest to the body of water to be enclosed. The opposite side of the pre-molded plastic section is provided with surface irregularities and is thinner than the trench width so as to form an opening between the plastic section and the trench wall. Concrete is then poured through the opening and fills the trench and fully occupies the opening in the trench adjacent the exposed irregular surface of the pre-molded plastic section.

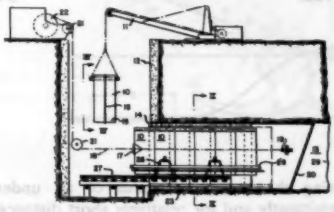
The soil adjacent the premolded section is removed after the concrete has initially set and the plastic sections are then also removed to reveal the irregular surface formed in the concrete. The irregular surface, in its preferred embodiment has a natural rock-like formation and forms the shoreline for the water body to be retained. The plastic sections are preferably made of polyurethane foam core material with a concrete release agent coated thereover.

3,768,267

TELESCOPING LINING AND SUPPORT STRUCTURE AND METHOD FOR LINING TUNNELS AND SHAFTS

Nicholas Chlumecky, Poland, Ohio, assignor to Commercial Shearing & Stamping Company, Youngstown, Ohio

Division of Ser. No. 101,875, Dec. 28, 1970. This application Oct. 13, 1971, Ser. No. 188,964
Int. Cl. E21d *11/05, 11/08*
U.S. Cl. 61—45 **4 Claims**



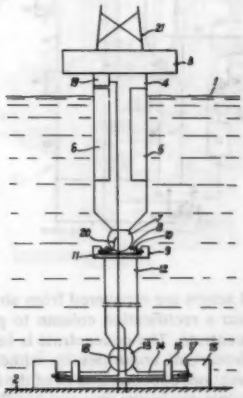
A novel telescoping lining and support structure and method for lining tunnels and shafts is provided in which a plurality of first chordal segments are drawn into a tunnel or shaft hole in a reduced diameter state of compression, expanded diametrically one after another in place in said tunnel or shaft and keyed in the expanded state by a second smaller chordal segment which completes an annular ring segment with the first chordal segment in place.

3,768,268

DRILLING OR PRODUCTION PLATFORM FOR WORK AT SEA

Maurice Laffont, La Celle-Saint-Cloud, and Jean-Jacques Houot, Maisons-Laffitte, both of France, assignors to Entreprise De Recherches Et D'Activites Petrolieres (Elf), Paris, France

Filed Sept. 20, 1971, Ser. No. 181,848
Claims priority, application France, Sept. 21, 1970, 7034115
Int. Cl. E02b *17/00*; E02d *27/04*
U.S. Cl. 61—46.5 **9 Claims**



A platform for drilling or production operations at sea, consisting of a working platform 3 above sea-level, carried by a

column 4 which is buoyant, containing tanks 5 and 6 for ballasting, and equipped with a jointed coupling 7 capable of swinging movement in two relatively transverse planes, connecting this first column to the upper end 9 of a second column 12, the other end of which, possibly equipped with another jointed coupling 13 with two degrees of play, is attached to a base 15 with high non-buoyancy, designed to rest on the sea-bed.

3,768,269

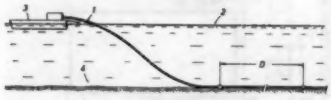
MITIGATION OF PROPAGATING COLLAPSE FAILURES IN PIPELINES DUE TO EXTERNAL LOAD

Douglas E. Broussard; Ray R. Ayers, and George E. Walker, Jr., all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 7, 1972, Ser. No. 242,002

Int. Cl. F16l *1/00, 9/04*

U.S. Cl. 61—72.3 **8 Claims**



By increasing the section modulus of an underwater pipeline intermittently and for relatively short distances to a substantially higher level, a barrier is provided preventing propagation of a collapse of the pipe caused by external pressure exerted on the outside diameter of the pipe.

3,768,270

AIR SEPARATION

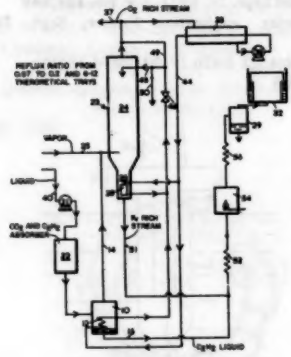
Paul Maurice Schuftan, East Twickenham, England, assignor to The British Oxygen Company Limited, London, England

Filed Nov. 22, 1971, Ser. No. 201,139

Claims priority, application Great Britain, Nov. 27, 1970, 56,485/70

Int. Cl. F25j *3/02, 3/03*

U.S. Cl. 62—31 **13 Claims**



Krypton and xenon are recovered from air by passing oxygen vapour into a rectification column to produce a krypton/xenon concentrate. The concentrate is kept substantially free from hydrocarbon impurities by withdrawing a small liquid oxygen fraction, containing most of the impurities, from the separation unit producing the oxygen. The rectification column has an upper section and a lower section, the ratio of the number of trays in the upper section to the number of trays in the lower section being in the range 6 to 12.

3,768,271

METHOD AND PLANT FOR STORING AND TRANSPORTING A LIQUEFIED COMBUSTIBLE GAS

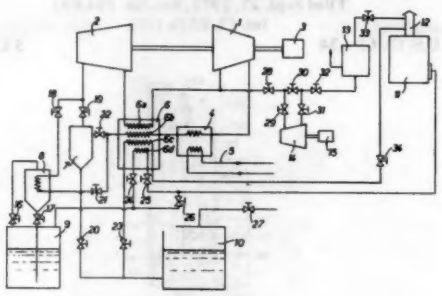
Louis Henri Daniel Denis, 43, rue Raffet, Paris, France

Filed Jan. 18, 1972, Ser. No. 218,738

Claims priority, application France, Jan. 19, 1971, 7101682

Int. Cl. F17c *7/02*

U.S. Cl. 62—55 **9 Claims**



For the purpose of storing and transporting a liquefied combustible gas, in a methane tanker for example, together with a virtually inert gas such as nitrogen in contact with said combustible gas, use is made of additional energy either, as the case may be, in order to liquefy the inert gas — utilizing the evaporation of the combustible gas to that end — or in order to reliquefy the evaporated combustible gas — utilizing the evaporation of the liquid inert gas to that end.

3,768,272

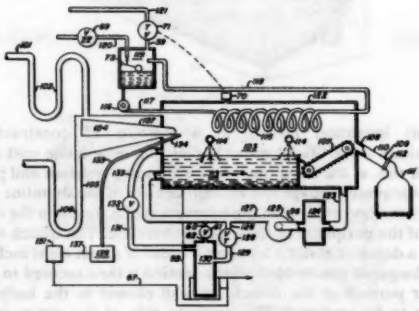
DIRECT CONTACT FOOD FREEZER

Lee A. Barrett, 2928 Lothair Way, Michigan City, Ind.

Continuation of Ser. No. 734,676, June 5, 1968. This application June 17, 1970, Ser. No. 48,912

Int. Cl. F25d *3/10*; F25b *43/00*

U.S. Cl. 62—60 **12 Claims**

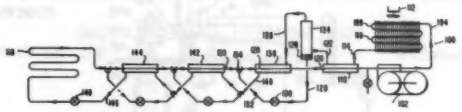


This invention provides a direct contact freezing device using a low boiling point, inert refrigerant in a stream having portions at different velocities for the direct contact freezing of comestibles without clumping of the particles or icing of the freezer.

3,768,273
SELF-BALANCING LOW TEMPERATURE REFRIGERATION SYSTEM

Dale J. Missimer, San Anselmo, Calif., assignor to Gulf & Western Industries, Inc., New York, N.Y.

Filed Oct. 19, 1972, Ser. No. 299,049
Int. Cl. F25b *1/00*
U.S. Cl. 62—84 14 Claims

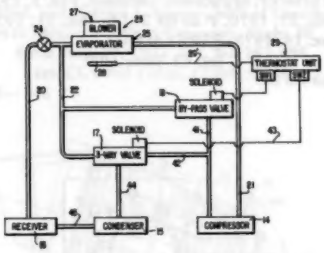


Extremely low temperatures, in the range of −40°F. to −300°F., are achieved in a single circuit compression refrigeration system which is capable of being operated by a conventional compressor without the aid of special start-up or stand-by equipment. The system relies upon a series of intermediate cooling stages in which each stage includes the steps of withdrawing a portion of the liquid condensate from a compressed vapor-liquid refrigerant mixture which enters that stage, throttling the withdrawn condensate to a lower pressure, mixing the throttled condensate with refrigerant being recycled to the compressor from the final evaporator and evaporating the throttled condensate to absorb heat from and at least partially condense the compressed unconcensed vapor in the compressed mixture.

3,768,274
SYSTEM FOR CONTROLLING COOLING AND HEATING OF A LOADING SPACE

James K. Fink, Lakeland, Fla., assignor to Fruit Growers Express Company, Washington, D.C.

Filed Aug. 28, 1972, Ser. No. 284,174
Int. Cl. F25b *29/00*
U.S. Cl. 62—159 5 Claims

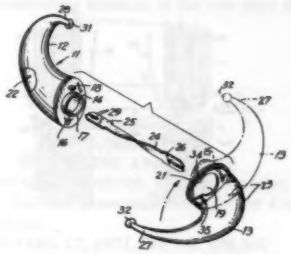


Refrigeration apparatus operating in a cooling cycle as well as a heating cycle for delivering cooled or heated air from an evaporator to a loading space and permitting a direct delivery of a portion of the hot gas from a compressor to the evaporator during selected periods of both cooling and heating cycles. A bypass valve system disposed between the compressor and evaporator is under the control of a thermostat unit, sensing the temperature of the air and when open permits the flow of the portion of hot gas.

3,768,275
EAR ORNAMENT WITH LEAF SPRING HAVING BIFURCATED ENDS SOLDERED TO RESPECTIVE ORNAMENT SECTIONS

Abraham Blumstein, New York, N.Y., and Rocco Agoglia, Belleville, N.J., assignors to Lucien Piccard Industries, Inc., New York, N.Y.

Filed Nov. 16, 1971, Ser. No. 199,148
Int. Cl. A44c *7/00*
U.S. Cl. 63—14 D 4 Claims

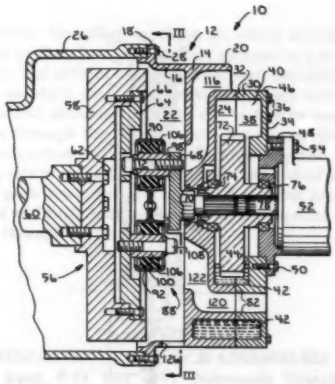


An essentially circular ear ornament comprises two semicircular sections pivotable relative to each other about a bearing therebetween. The sections are urged to gripping position by a leaf-spring seated in slits in the two sections.

3,768,276
AIR-COOLED RESILIENT COUPLING ASSEMBLY

Samuel I. Caldwell, Aurora, and Lawrence R. Cline, Oswego, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 10, 1972, Ser. No. 242,723
Int. Cl. F16d *3/28*
U.S. Cl. 64—11 R 8 Claims



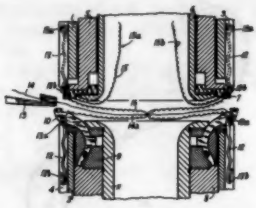
A resilient coupling assembly is provided having a housing with intake and exhaust ports arranged so that rotation of the coupling is utilized to produce a vortex flow of cooling air through the housing and past the coupling in order to minimize thermal failures and thereby increase operating life of the assembly.

3,768,277

METHOD OF KNITTING ON A DOUBLE CYLINDER MACHINE AND STOCKING FORMED THEREBY

Pavel Uhlir, Trebic, Czechoslovakia, assignor to Elitex Zavody textilniko strojirenstvi, Liberec, Czechoslovakia

Filed July 22, 1969, Ser. No. 843,693
Claims priority, application Czechoslovakia, July 22, 1968, 68/5348
Int. Cl. D04b 9/10, 9/56
U.S. Cl. 66—9 R 5 Claims



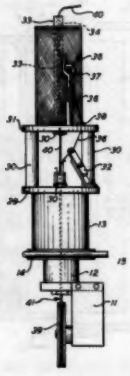
A method of forming a stocking on a double cylinder circular knitting machine, comprising knitting the stocking from the welt through the sole and instep on the needles in one of the cylinders, continuing the formation of the toe portion by knitting a predetermined number of circular courses on both of the cylinders so as to provide a toe portion having a combination of stitches, contracting the toe portion at about its center and stitching the last course thereof to the instep and sole.

3,768,278

SHEATH KNITTER

Anthony S. Latella, 64 Bently Rd., Cedar Grove, N.J.

Filed Feb. 14, 1972, Ser. No. 226,082
Int. Cl. D04b 9/44
U.S. Cl. 66—9 A 4 Claims



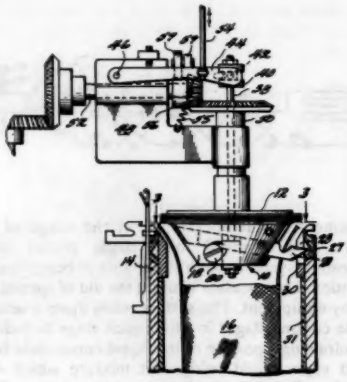
A sheath knitter which produces an ornamental cord which consists of a core thread with an open mesh loosely knitted sheath by introducing a core through a knitting head while feeding the knitting needles with material mounted on a superstructure connected to the cams that drive the needles.

3,768,279

SLITTING MECHANISM FOR USE WITH CIRCULAR KNITTING MACHINES

Vaughn H. Butler, Harriman, Tenn., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Feb. 28, 1972, Ser. No. 229,897
Int. Cl. D04b 35/34
U.S. Cl. 66—147 11 Claims



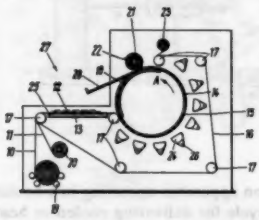
A mechanical slitting mechanism is provided with first and second cutting elements arranged beneath a dial assembly of a circular knitting machine so as to provide for controlled cutting of a tubular fabric being knitted by the machine. Rack and pinion mechanisms are utilized for imparting controlled reciprocations to the first cutting element relative to the second cutting element. A free end portion of the reciprocating cutting element is shielded from the tubular fabric so as to prevent snagging of the fabric during cutting operations.

3,768,280

APPARATUS FOR PRINTING ON TEXTILE STRIPS AND PIECES

Herbert Kannegiesser, Hollwiesen-Vlotho; Richard Juraschek, Vloth, Weser am Kinderheim, and Klaus Mussiger, Bad Salzuflen, all of Germany, assignors to Kannegiesser Machinenfabrik Kommanditgesellschaft, Vlotho/Weser, Hollwiesen, Germany

Filed Feb. 2, 1971, Ser. No. 111,966
Claims priority, application Germany, Feb. 5, 1970, P 20 05 186.9; Feb. 27, 1970, P 20 09 211.9; Dec. 11, 1970, P 20 61 026.8; Dec. 14, 1970, P 20 61 450.0
Int. Cl. D06c 1/00
U.S. Cl. 68—5 D 10 Claims



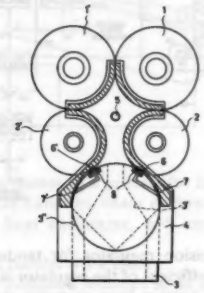
Disclosed herein is an improved system for printing on textile by sublimation of a dye-coating contained on a printing foil the printing occurring when the textile and the foil are placed in contact under the influence of heat and pressure.

3,768,281

PRESSURE SEALING APPARATUS

Yoshikazu Sando, and Masao Takasu, both of Wakayama-ken, Japan, assignors to Sando Iron Works Company Limited, Wakayama-shi, Japan

Division of Ser. No. 8,548, Feb. 4, 1970, Pat. No. 3,686,900.
This application Mar. 16, 1971, Ser. No. 124,851
Claims priority, application Japan, May 23, 1969, 44/47701; May 29, 1969, 44/42010; Sept. 3, 1969, 44/83692; Sept. 3, 1969, 44/104656; Sept. 22, 1969, 44/90521; Sept. 22, 1969, 44/90522; Oct. 16, 1969, 44/82778; Nov. 17, 1969, 44/92018
Int. Cl. B08b *1/02, 3/04*; D06f *35/00*
U.S. Cl. 68—5 E 4 Claims



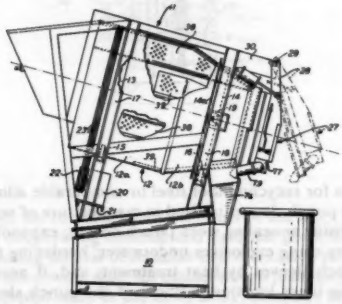
A pressure sealing apparatus comprising a seal drum or a seal block having a hole for the passage of cloth, installed on the opening for guiding cloth in and out of a pressure chamber; rolls which are pressed through intermediate rolls on the seal drum or the seal block and are rotated in contact with each other for putting cloth in and out; and a sealing end plate which is engaged with the seal drum or the seal block to be able to move in an axial direction and which is pressed on each end face of the said drum or block and the above-said rolls; and which is characterized in that the before-mentioned sealing end plate is made as a metallic case, having a flexible sealing material laid on the side, which is pressed on the end face of each roll, and the flexible sealing material is uniformly pressed on the end face of the roll by a pressure liquid.

3,768,282

SLANT MOUNTED LAUNDRY MACHINE

John J. Miller, and George J. Vesper, both of Cincinnati, Ohio, assignors to McGraw-Edison Company, Elgin, Ill.

Filed June 29, 1972, Ser. No. 267,485
Int. Cl. D06f *37/06, 37/08, 37/10*
U.S. Cl. 68—146 6 Claims



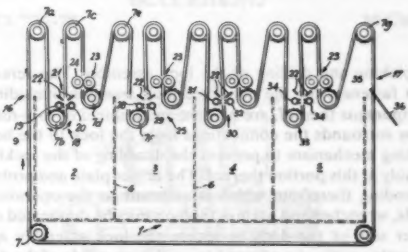
A laundry machine of the slant mounted type has a tub of imperforate construction comprising an upper cylindrical portion with a loading opening and a lower frusto-conical portion with an unloading opening. A door for the unloading opening has a chamber for a body of pre-washing liquid having communication with the tub through a perforated inside wall of the door. In the present improved design the tub is provided with a plurality of perforated ribs and of intervening channel members which provide a pathway bypassing the load for supplementing the inter-flow of washing liquid between the tub and the door chamber during an operating cycle and which aids also in the drainage while the door is closed and the drain valve is opened. Further, the ribs and channel members provide some channels for drainage of the last bit of washing liquid during continuing rotation of the tub after the door is opened.

3,768,283

DE-SOILING APPARATUS

John Bold, and John Scribens, both of London, England, assignors to National Research Development Corporation, London, England

Filed Oct. 12, 1971, Ser. No. 188,361
Claims priority, application Great Britain, Oct. 13, 1970, 48,592/70; Apr. 13, 1971, 9,216/71
Int. Cl. D06f *29/02, 35/00*
U.S. Cl. 68—205 R 5 Claims



A continuous de-soiling machine in which articles pass through slots or like clearances and are sprayed by jets as they pass through. The articles are carried through the machine by a conveyor on which they are carried by hangers which hold them by one end, allowing the other end to trail or hang. The articles pass through the slots in their end-to-end direction, preferably supported end first. The machine may also include occasional pairs of nip rollers to squeeze fluid out of the articles, which pass through nips end-to-end also but preferably unsupported end first. Jets may be arranged to spread articles as they pass through the slots.

3,768,284

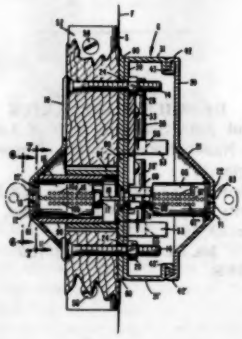
MAXIMUM SECURITY LOCK ASSEMBLIES

Robert W. Kent, P.O. Box 4311, Normandy Branch, 1940 Biarritz Drive, Miami Beach, Fla., and Robert W. Kent, Jr., 23 Wolcott Avenue, Andover, Mass.

Filed June 29, 1972, Ser. No. 267,474
Int. Cl. E05b *9/04*
U.S. Cl. 70—104 23 Claims

A maximum security lock assembly adapted for mounting on a door within a door frame, comprised of an armor plate of tool-resistant alloy steel having an integral frusto-conical protrusion extending outwardly therefrom, on the interior of

which is fixed a pin tumbler lock with a cylindrical plug or core which is released for rotary movement upon the insertion of the properly fitted key into its keyhole. An oscillating crank connected to the rotary plug actuates a bolt mechanism which is selectively engageable with apertured lugs on a strike on the door frame which extend into the field of movement of the locking bolts when the door is in closed position. An opening of restricted area in the outer wall of said protrusion permits the insertion of said key into the keyhole of the lock and the rotation thereof while leaving concealed the main outer face of the lock and especially the portions thereof most vulnerable



to picking and drilling of the lock assembly. The screw and bolt fasteners for the complete lock assembly including the components thereof, are hidden, and a shield of tool-resistant alloy surrounds the connections from the lock to the bolt actuating mechanism to prevent the disabling of the locking assembly at this portion thereof. The armor plate and protrusion extending therefrom which is resistant to the operations of drills, wrenches and jimmys thereon may be duplicated on the inner side of the door to secure the lock assembly against operation without a proper key on the inner side of the door as well as on the exterior thereof.

3,768,285

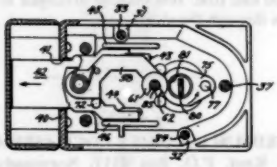
DOUBLE DOOR LOCK

Jerome Schwartz, Philadelphia, Pa., assignor to Taylor Lock Company, Philadelphia, Pa.

Filed Nov. 15, 1971, Ser. No. 198,649

Int. Cl. E05b 65/06

U.S. Cl. 70—134 **9 Claims**



A double cylinder door lock wherein a bolt is slidable in a housing for extension and retraction, the bolt's sliding being effected by operating means within the housing carrying a receiver, and a pair of separate key controlled mechanisms having respective engaging means selectively entering the receiver to effect a desired bolt movement with the nonentering engaging means permitting the desired bolt movement.

3,768,286

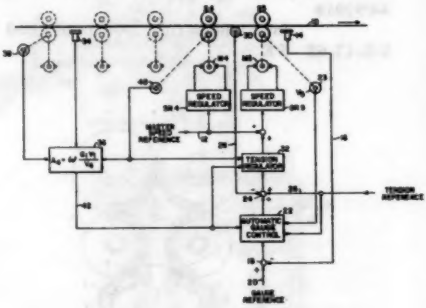
INTERSTAND TENSION REGULATOR FOR A MULTISTAND ROLLING MILL

Robert S. Peterson, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 29, 1972, Ser. No. 230,300

Int. Cl. B21b 37/12

U.S. Cl. 72—9 **11 Claims**



An interstand tension regulator for tandem rolling mills wherein the gain coefficient of the regulator is varied to maintain a fast constant tension loop response regardless of mill speed, the cross-sectional area of the product being rolled, and its modulus of elasticity.

3,768,287

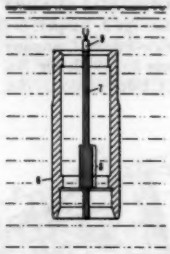
PROCESS FOR RECYCLING STEEL BODYMAKER PUNCH SLEEVES

Ivor G. Hanson, Apt. 303 265 3rd Ave., Boulder, Colo.

Filed Mar. 27, 1972, Ser. No. 238,632

Int. Cl. B21d

U.S. Cl. 72—56 **10 Claims**



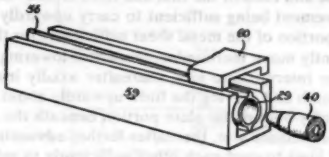
A process for recycling tool steel or comparable alloy steel bodymaker punch sleeves utilized in manufacture of seamless cans comprising annealing worn punch sleeves; expanding the punch sleeve using explosives underwater; hardening the expanded punch sleeves by heat treatment; and, if necessary, reducing the inner location surfaces of the punch sleeve by plating or metallizing with acceptable metal; and grinding the locating surfaces, outside surfaces, nose, and ends of the punch to the specified size; and the rebuilt punch sleeves as articles of manufacture.

3,768,288

PROCESS FOR THE PRODUCTION OF TUBE FROM DUCTILE METAL

Harold Rex Jury, Norwood, Australia, assignor to Jury & Spiers Proprietary Limited, Norwood, Australia

Filed Feb. 22, 1972, Ser. No. 228,208
Claims priority, application Australia, Feb. 25, 1971, 4131/71
Int. Cl. B21d 51/14
U.S. Cl. 72—61 4 Claims



The invention relates to a process for forming a thin walled tubing which may either be linear or formed to a shape as for example for a heat exchanger, and includes the following steps:

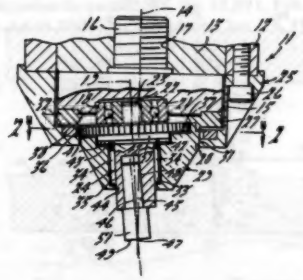
a. flattening a tubular work piece,
b. rolling the flattened member so as to increase its length and reduce its wall thickness without substantially increasing its width, and
c. introducing fluid into the member at sufficient pressure to deform its contiguous walls away from one another.

3,768,289

PLANETARY HEAD FORMING TOOL

George Mink, Warren, Mich., assignor to VSI Corporation, Pasadena, Calif.

Filed Oct. 29, 1971, Ser. No. 193,872
Int. Cl. B21j 15/16
U.S. Cl. 72—67 5 Claims



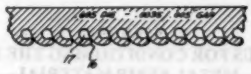
A tool for forming heads on rivets or the like. The tool includes cooperating internal and external gears and a driven shaft having an axis of rotation that is inclined relative to the axis of the driving shaft for establishing a planetary movement of the driven shaft as the drive shaft rotates. A head forming tool is carried by the driven shaft and is disposed at an angle to the axes of the driving and driven shafts. Due to this angular orientation the tool wipes across the surface of the rivet to work form this surface and upset it.

3,768,290

METHOD OF MODIFYING A FINNED TUBE FOR BOILING ENHANCEMENT

Vincent A. Zatell, Lathrup Village, Mich., assignor to Universal Oil Products, Des Plaines, Ill.

Filed June 18, 1971, Ser. No. 154,312
Int. Cl. B21b 15/00
U.S. Cl. 72—68 16 Claims



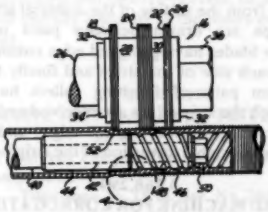
Tubing having circumferentially extending fins, either annular or helical, is modified by forming or bending the fins transversely so that the tip of each fin convolution is closely adjacent to a portion of the next adjacent fin convolution providing small continuous or discrete gaps of predetermined and controlled average size into substantially confined spaces between adjacent fin convolutions.

3,768,291

METHOD OF FORMING SPIRAL RIDGES ON THE INSIDE DIAMETER OF EXTERNALLY FINNED TUBE

Klaus K. Rieger, Bloomfield Hills, Mich., assignor to Universal Oil Products, Des Plaines, Ill.

Filed Feb. 7, 1972, Ser. No. 224,095
Int. Cl. B21h 3/12
U.S. Cl. 72—78 10 Claims



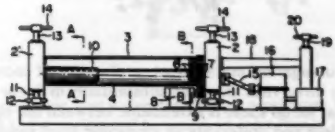
Helical external fins and helical internal ridges are formed simultaneously on a tube by rolling the fins up out of the tube with inclined rotating discs, and pressing the tube onto a rotatable spirally or helically grooved portion of a multiple part internal pin.

3,768,292

MACHINES FOR BENDING SEGMENTAL ANNULAR PLATE OR SHEET INTO CONICAL FRUSTOM

Kokichi Tsuru, Mitagawa-machi, Japan, assignor to Kabushiki Kaisha Tsuru Tekkosho, Mitagawa-machi, Kanzaki-gun, Japan

Filed Apr. 20, 1972, Ser. No. 246,010
Int. Cl. B21d 9/10
U.S. Cl. 72—169 9 Claims



A machine for bending a segmental annular sheet or plate into a conical frustom comprises a pair of upper and lower

feed rolls arranged in parallel with a gap therebetween sufficient to grip and feed the segmental annular sheet or plate therethrough, and a pair of bending rolls obliquely disposed adjacent to and on opposite sides of the paired feed rollers. In order to carry out taper bending quickly and easily, the paired feed rolls are provided around their lesser diameter end portions with high-speed feed rings driven independently of the paired feed rolls and capable of positively feeding the longer arc part of the segmental annular sheet or plate at a speed greater than that of the shorter arc part fed by the paired feed rolls.

3,768,293

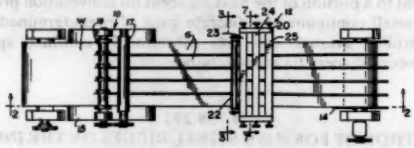
APPARATUS FOR CONDITIONING THE EDGES OF METAL STRIP MATERIAL

Alan D. Ruesch, 904 Seegwun, Mount Prospect, Ill.

Filed Nov. 11, 1971, Ser. No. 197,859

Int. Cl. B21b *15/00*

U.S. Cl. 72—203 **16 Claims**



An apparatus for conditioning the edges of metal strip material which is delivered from a web slitting apparatus or other source wherein grooved rollers are arranged in pairs for receiving one or more strips of the material with the edges along opposite sides of the strips traveling in oppositely disposed, transversely aligned grooves which remove any burrs resulting from the slitting of the material after which the deburred strips are drawn between pairs of oppositely disposed cutter blades having aligned edge cutting formations operative on each side of the strips and finally the strips are passed between pairs of finishing rollers having aligned grooves in which the strip edges are received and which apply pressure sufficient to round the cut edges and smooth the same without appreciable distortion of the strip body.

3,768,294

METHOD AND MACHINE FOR CORRUGATING METAL SHEET

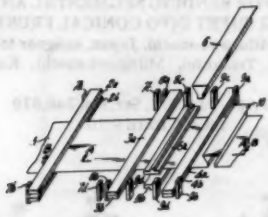
Edsger Wybe Van Dijk, Albert Neuhuyestraat 25 Utrecht, Netherlands

Filed Mar. 1, 1972, Ser. No. 230,888

Claims priority, application Netherlands, Mar. 3, 1971, 7102788; Nov. 1, 1971, 7115025

Int. Cl. B21d *13/00*

U.S. Cl. 72—307 **8 Claims**



For corrugating metal sheet, a plurality of movable vises, typically three vises arranged substantially in linear series such that a flat metal sheet is extendable between the open jaws of all the vises and preferably an elongated form mounted at one end thereof and movable to and fro axially and to and fro upwardly and downwardly between upper and lower jaws of the intermediate second vise, the first and third vises being equally spaced from the intermediate second vise and each of the first and third vises being laterally movable toward one another to a predetermined closeness, the intermediate vise being movable upwardly and downwardly alternately, a preferred process including opening all vises' jaws, placing a metal sheet at a position between opposing jaws of all vises, thereafter clamping closed the jaws of all vises with the first and third vises each spaced a predetermined first distance on about opposite sides of the intermediate vise, thereafter elevating the intermediate closed vise while permitting the first and third closed vises to be dragged laterally toward one-another for predetermined distances by the force transmitted through the interconnecting metal sheet extending between the intermediate closed vise and each of the first and third closed vises, the upward movement being sufficient to carry upwardly the intermediate portion of the metal sheet sufficiently for the form to subsequently move thereunder, thereafter lowering the lower jaw of the intermediate vise, thereafter axially inserting the form beneath and moving the form upwardly about flush with the upwardly bent metal plate portion beneath the upper jaw of the intermediate vise, thereafter further advancing the first and third vises toward each other sufficiently to substantially close the intermediate portion of the metal sheet flushly around the form thereafter further raising the intermediate vise's upper jaw from contact with an upper face of the intermediate bent portion of the metal sheet, thereafter opening the jaws of the first and third vises and laterally withdrawing the first and third jaws to their position at the above-stated first distance, thereafter axially withdrawing the form to its initial position, thereafter advancing the metal sheet by lateral movement of a clamped transfer vise, and thereafter opening and returning the transfer vise to its initial position.

3,768,295

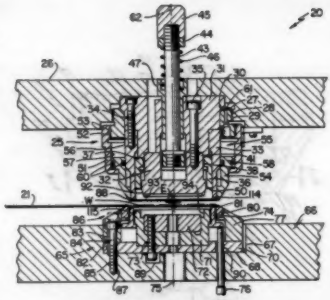
FORMING APPARATUS AND METHOD

Daniel F. Cudzik, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Feb. 8, 1972, Ser. No. 224,566

Int. Cl. B21d *22/06*

U.S. Cl. 72—347 **3 Claims**



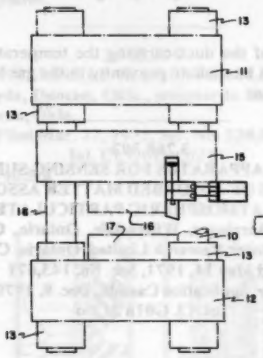
An apparatus for and method of forming a sheet metal blank is provided and includes a first die member having an outside forming surface and a second die member having an inside forming surface adapted to cooperate with the outside forming surface to form a workpiece interposed therebetween upon relatively moving the die members along a forming path into operative association. One of the die members is movable transverse such path enabling the forming surfaces acting through the workpiece to precisely align the one member to a forming position and thereby assure precise forming of the workpiece during the operative association.

3,768,296

METHOD AND APPARATUS FOR PRESSING AND INDENTING A WORKPIECE

Kurt Pollak, Havertown, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Sept. 13, 1972, Ser. No. 288,639
Int. Cl. B21d *37/00*
U.S. Cl. 72—377 8 Claims



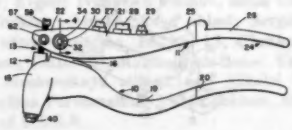
The disclosure of this invention relates to a method and/or apparatus for performing in a prescribed operational sequence a pressing and a nosing operation on a workpiece, such as, a metallic slab. The pressing operation is accomplished by a movable platen and punch carried thereby; whereas, the nosing operation is accomplished by a nosing tool secured to the platen and movable therewith. A piston cylinder assembly moves the nosing tool in guides relative to the platen, in which behind the tool there is adapted to be selectively inserted one or more filler pieces of varying thickness, the purpose of which is to be able to vary the penetration of the nosing tool in a manner that the working force of the nosing tool is transferred from the tool to the platen.

3,768,297

MANUALLY OPERATED MANDREL RIVET SETTING TOOL WITH LEVER THROW ADJUSTMENT

Alan Martin, 44 Lantern Ln., Sharon, Mass.

Continuation-in-part of Ser. No. 10,891, Feb. 12, 1970, Pat. No. 3,646,800. This application Jan. 19, 1972, Ser. No. 219,053
Int. Cl. B21j *15/34*
U.S. Cl. 72—391 17 Claims



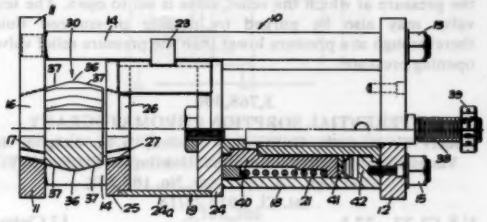
A mandrel rivet setting tool which provides for ready adjustment in the gripping strength of the jaws and in the throw of the lever to adjust for the strength of the rivet as well as for the grip of the individual operating the tool. Optional means for automatically collecting the mandrels is also provided. The tool may be used for rivets having mandrels formed over a wide range of diameters and of a range of materials.

3,768,298

SWAGING APPARATUS

Michael William Olive-Jones, Maidenhead, and Douglas Raymond Randall, London, both of England, assignors to BTR Industries Limited, London, England

Filed Nov. 17, 1971, Ser. No. 199,576
Claims priority, application Great Britain, Nov. 19, 1970, 55,117/70
Int. Cl. B21d *39/00*
U.S. Cl. 72—402 4 Claims



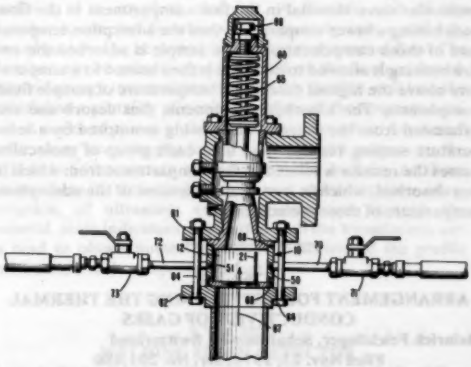
Swaging apparatus which includes a swaging member having a plurality of radially disposed swaging fingers with resilient means located between adajacent fingers, and compresssion means to force the fingers radially inwardly so that the inner ends of the fingers may swage a workpiece located therebetween. The resilient means may comprise elastomeric blocks each bonded between adjacent fingers. The outer surface of each finger may have two portions tapered in opposite senses, and the swaging member may be located between two plates each having an aperture tapered in the same sense as the respective adjacent tapered portion, so that the fingers are compressed radially inwardly as the plates are moved towards one another.

3,768,299

AUTOMATIC TEST VALVE FOR TESTING PRESSURE RELIEF VALVES

Leeroy L. Garren, Pampa, Tex., assignor to Lee-Tex Valve, Inc., Pampa, Tex.

Filed June 26, 1972, Ser. No. 266,495
Int. Cl. F16k *17/00*
U.S. Cl. 73—4 R 13 Claims



An automatic test valve for testing a pressure relief valve adapted to be positioned between an inlet flange of the relief valve and a companion flange of a pressure system. The valve includes a cylindrical body defining a chamber and having a base member with an orifice therein. A spring biased pivotal clapper valve member normally closes the orifice. The orifice

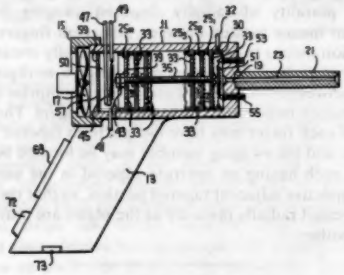
is larger than the orifice of the pressure relief valve being tested. The body is provided with an inlet opening leading into the chamber and a discharge opening leading from the chamber to permit pressurized test fluid to be introduced into the chamber and to permit fluid to be discharged therefrom so that the chamber may be purged without removing the valve from the pressure system. To test a pressure relief valve, the test valve is mounted between the relief valve inlet flange and a companion flange of the pressure system and a fluid is then introduced under pressure on the pressure relief valve side of the test valve and the pressure increased on that side to at least the pressure at which the relief valve is set to open. The test valve may also be purged by passing pressurized fluid therethrough at a pressure lower than the pressure relief valve opening pressure.

3,768,300

DIFFERENTIAL SORPTION CHROMATOGRAHY

Robert C. Nemeth, Huntington Station, N.Y., assignor to Vacuum Instrument Corporation, Huntington Station, N.Y.

Filed Sept. 24, 1971, Ser. No. 183,348
Int. Cl. G01n 25/18
U.S. Cl. 73—23.1 **13 Claims**



Chromatographic analysis of fluids is effected with a compact structure having a housing segmented into sequential compartments by interconnected heater elements coated on one surface by molecular sieve material. The compartments are differentially heated and sample fluid is caused to flow sequentially through compartments of decreasing temperature. Molecular components of the fluid are adsorbed by molecular sieve material in the first compartment in the flow path having a lower temperature than the adsorption temperature of those components. After a sample is adsorbed the entire housing is allowed to cool and is then heated to a temperature above the highest desorption temperature of sample fluid components. The adsorbed components thus desorb and are exhausted from the housing while being monitored by a temperature sensing resistor. The time each group of molecules passes the resistor is related to the compartment from which it was desorbed, which in turn is an indication of the adsorption temperature of those molecules.

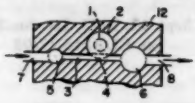
3,768,301

ARRANGEMENT FOR DETERMINING THE THERMAL CONDUCTIVITY OF GASES

Heinrich Feichtinger, Schaffhausen, Switzerland

Filed Nov. 23, 1971, Ser. No. 201,480
Claims priority, application Switzerland, Nov. 25, 1970, 17488/70
Int. Cl. G01n 27/18
U.S. Cl. 73—27 R **8 Claims**

An arrangement for measuring the thermal conductivity of a gas in which a temperature sensor is held within a duct oriented perpendicular to a plurality of smaller ducts carrying the gas to be subjected to the measurement. The plurality of gas ducts intersect the duct carrying the temperature sensor, in a tangential manner, so that a whirl of the gas is created



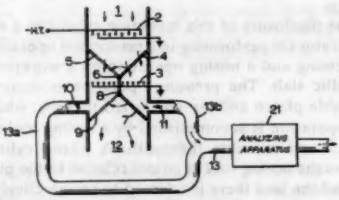
along the wall of the duct carrying the temperature sensor, while the zone in immediate proximity to the gas has substantially stagnant gas.

3,768,302

METHOD AND APPARATUS FOR SENSING SUBSTANCES BY ANALYSIS OF ADSORBED MATTER ASSOCIATED WITH ATMOSPHERIC PARTICULATES

Anthony Rene Barringer, Willowdale, Ontario, Canada, assignor to Barringer Research Limited, Ontario, Canada

Filed May 14, 1971, Ser. No. 143,671
Claims priority, application Canada, Dec. 8, 1970, 100078
Int. Cl. G01n 31/06
U.S. Cl. 73—28 **5 Claims**



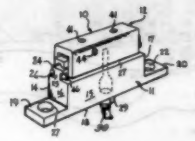
A method and apparatus for sensing substances, such as mineral deposits, in which atmospheric particulates in an area being investigated are collected, and adsorbed matter is removed from the particulates. The adsorbed matter (usually in the gaseous state) is then analyzed to provide information concerning the possible existence of the substance in the area being investigated.

3,768,303

MINIATURE YARN AIR GAUGE HEAD

William Theodore Rauch, Voorheesville, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Feb. 15, 1972, Ser. No. 226,437
Int. Cl. G01b 13/02
U.S. Cl. 73—37.7 **9 Claims**



A miniature air gauge head for use primarily with material monitoring and/or recording devices and including a gauge base and a gauge head assembly, the gauge base being permanently mounted behind the manufacturing product line material so that the material passes in slightly spaced relation above the finished surface of the base along the length of the latter when the gauge head assembly is not assembled to the gauge base, the gauge head assembly comprising a substan-

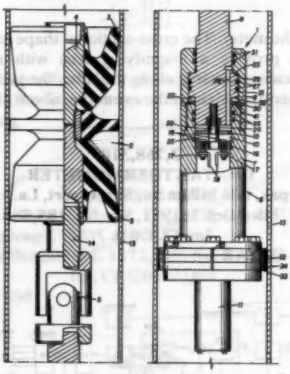
tially U-shaped gauge head and a gauge plate wherein the gauge plate contains a groove along its length through which the yarn, wire or fiber material to be measured travels when the gauge head assembly is assembled to the gauge base, the gauge head assembly being assembled to the gauge base by means of a dovetail construction, and air being admitted to the gauge plate through a suitable connecting line such that the air flows lengthwise through the gauge plate groove and the space remaining between the filaments being measured and the side walls of the groove.

3,768,304

PIPELINE LEAK LOCATOR PLUG

Walter E. Hyde, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Mar. 27, 1972, Ser. No. 238,031
Int. Cl. G01m *3/28*
U.S. Cl. 73—40.5 R **14 Claims**



A pipeline leak locator plug having a signal transmitter connected to a switch and having sealing cups and discs for sealingly engaging the interior of the pipeline, operates by a change in fluidic pressure caused by a leak in the pipeline, whereby a signal as to whether the leak is upstream or downstream is actuated by the pressure differential acting on the sealing cups through the switch to the transmitter.

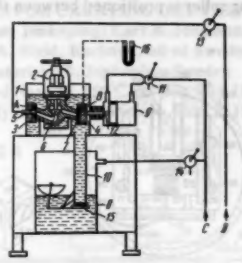
3,768,305

INSTALLATION FOR TESTING PRESSURE TIGHTNESS OF CHECK VALVE CLOSING ELEMENT

Mikail Alexeevich Pechko, Kotelnicheskaya naberezhnaya, 1/15, kv. 353; Boris Yakovlevich Ivnitsky, 1 Granvoronovsky pereulok, 7, kv. 44; Eduard Evgenievich Blagov, Belyaevo-Bogorodskoe, kvartal 44, korpus 3, kv. 142; Ivan Grigorievich Filatov, Furmanovsky pereulok, 12, kv. 47, all of Moscow; Evgeny Ivanovich Ustinov, ulitsa Gagarina, 39, kv. 44, Chekhov, Moskovskaya oblast; Sergei Iosifovich Rozhkov, ulitsa Gagarina, 26, kv. 13, Chekhov, Moskovskaya oblast; Viktor Konstantinovich Belov, Venjukovo, 1, Chekhov, Moskovskaya oblasti, and Nikolai Viktorovich Gruzdev, ulitsa Pervomalskay, 33, Chekhov, Moskovskaya oblast, all of U.S.S.R.

Filed Feb. 24, 1971, Ser. No. 118,310
Int. Cl. G01m *3/08*
U.S. Cl. 73—45.5 **4 Claims**

An installation for testing the pressure tightness of a closing element of a check valve, comprising a bath in which the valve can be immersed, and a mechanism for clamping the valve between fixed and movable sealing plugs at the end faces thereof. The fixed sealing plug has a channel to supply compresed testing gas into the valve, the other sealing plug having a channel for the discharge of leakage gas. The last mentioned plug is connected to a rod of a pneumatic cylinder and communicates with a source of compressed air. A fluid reservoir is



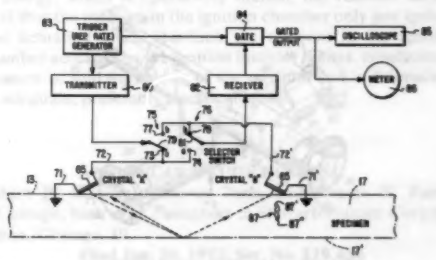
located under the bath and is in communication therewith via a by-pass pipe which contains a float valve at its lower end.

3,768,306

ULTRASONIC APPARATUS AND METHOD FOR ANALYZING DEFECTS IN MATERIAL

Charles A. Stearns, Apt. 17, 2215 Ambassador Dr., N.E. Executive West, Albuquerque, N. Mex.

Filed Dec. 20, 1971, Ser. No. 209,870
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.8 R **7 Claims**



A pair of ultrasonic transducers, operatively connected to electrical signal generating and detecting circuits, are mounted in spaced relationship for movement through a liquid confined in a couplent chamber. A flexible wall of the chamber is adapted for close engagement against a wall surface of material to be tested for a suspected internal flaw. The chamber can be selectively positioned on this surface for ultrasonic energy transmission through the flexible wall into the material at a plurality of positions adjacent the suspected defect. A series of passes of the transducers is made in sequential order along lines longitudinally oriented with respect to the surface but transversely spaced across the surface. At those points where the detecting means reveal an interruption, or resumption, of ultrasonic energy transmission through the material, scale indicators, associated with the transducers, can be read to obtain numerical values indicative of the profile and location of the suspected defect.

3,768,307

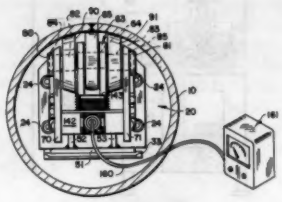
WELDING FLASH DETECTOR

Heinz A. Rode, Struthers, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Filed June 28, 1971, Ser. No. 157,407
Int. Cl. G01b *19/32*
U.S. Cl. 73—105 **23 Claims**

A welding flash detector mounted to a flash cutter carried by a cutting mandrel. As the work-piece, such as a pipe or conduit, passes along the cutting mandrel the detector moni-

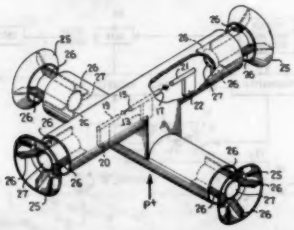
tors the operation of the cutting mandrel. The detector includes a pair of spaced reference rollers which straddle the weld seam and are biased into engagement with the work-piece. A sensing roller is positioned between the reference rollers and biased into engagement with the weld seam. A linear transducer senses the variation in relative position of the reference and sensing rollers and provides an electrical signal which is indicative of surface variations between the weld seam and adjacent work-piece portions.



3,768,308
FLOW SENSOR

Vincent F. Neradka, Rockville, Md., assignor to Bowles Fluidics Corporation, Silver Spring, Md.

Filed Dec. 3, 1971, Ser. No. 204,448
Int. Cl. G01w *1/02*
U.S. Cl. 73—189 11 Claims



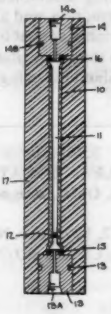
A parallel flow sensor, of the type in which a sensing jet flows parallel to and within a measured flow and experiences velocity variations as a linear function of the measured flow, is modified to vary the sensing jet velocity cosinusoidally in response to angular variations in the measured flow. The flow sensor is located in a flow alignment tube, each end of which has a truncated cone flaring outwardly therefrom in axial alignment with the tube. The truncated cone is spaced from the tube end by angularly spaced supporting ribs which also serve as flow guides along the interior surface of the truncated cone. A short length of cylindrical tubing, having a smaller diameter than the flow alignment tube, is also supported by the ribs and extends from the interior of the flow alignment tube through one end of the truncated cone. Two orthogonally oriented sensors of this type provide respective output pressures which represent the rectangular co-ordinates of a measured flow such as wind.

3,768,309
PLASTIC-ENCAPSULATED VARIABLE-AREA FLOWMETER

John Michael Hart, High Lorton, England, assignor to Fischer & Porter Company, Warminster, Pa.

Filed Apr. 28, 1972, Ser. No. 248,413
Int. Cl. G01f *1/00*
U.S. Cl. 73—209 9 Claims

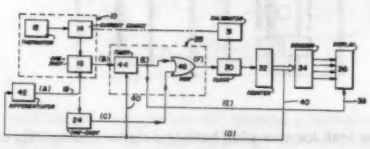
A flowmeter of the rotometer type, wherein a variable-area tube formed of glass and containing a float, is supported between inlet and outlet end fittings having ports to receive inlet and outlet pipes. The tube and the end fittings, save for the ports, are encapsulated in a transparent plastic jacket adapted to pre-stress the tube to enhance the pressure characteristics of the meter. The cross-sectional shape of the jacket is such as to provide a magnifying lens with respect to a calibrated scale extending along the tube, the jacket also serving as a protective shield in the event the tube is shattered.



3,768,310
DIGITAL THERMOMETER

John C. Krepak, 306 Milam St., Shreveport, La.

Filed Oct. 1, 1971, Ser. No. 185,588
Int. Cl. G01k *7/24*
U.S. Cl. 73—362 AR 19 Claims



A method and apparatus for measuring temperature within a preselected range of temperatures wherein the temperature is measured electronically and displayed digitally. A first electrical signal having a variable time duration proportional to the temperature being measured is compared with a second electrical signal having a preselected constant time duration indicative of the temperature comprising one end of the preselected range of temperatures. Counting, determining and display components of the apparatus function responsive to this comparison.

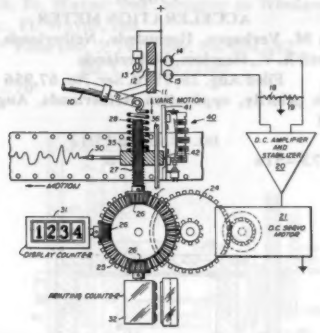
3,768,311
MOTION RESPONSIVE ELECTRICAL CONTROL APPARATUS

Joseph E. Gorgens, and William A. Heske, both of Fairfield, Conn., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 859,246, Sept. 17, 1969, which is a continuation of Ser. No. 732,472, April 12, 1968, abandoned, which is a continuation-in-part of Ser. No. 565,857, July 18, 1966, abandoned. This application Feb. 8, 1971, Ser. No. 113,419
Int. Cl. G01l *9/00*
U.S. Cl. 73—398 AR 10 Claims

A motion responsive electrical control apparatus for emitting an electrical control signal incrementally variable in desired correlation to a path of given mechanical motion. The apparatus includes a rotatably regulated electrical controller for emitting signals correlated to the angular position setting of the controller regulator. A cam member pivotally mounted onto the regulator of the controller is arcuately biased into

overlying engagement with a movable follower defining a motion path to which the apparatus is to respond. Presettably adjustable pitch members incrementally spaced along the path of



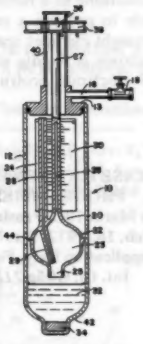
follower motion effect desired incremental changes in cam pitch thereat affording corresponding change to the controller position setting.

3,768,312

VACUUM GAUGE

Vytautas Andriulis, Chicago, Ill., assignor to Cenco Incorporated, Chicago, Ill.

Filed Jan. 12, 1972, Ser. No. 217,375
Int. Cl. G01l *21/04*
U.S. Cl. 73—400 **18 Claims**



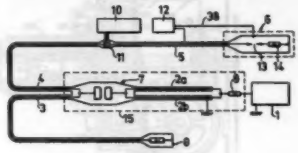
An apparatus for the precise measurement of pressures in vacuum systems including a closed and sealed container means in communication at its upper end with such a system and having disposed for vertical movement within it a plunger means having a hollow lower portion of either spherical bulb shape or bell shape and an upper portion having a reference capillary and a measuring capillary opening into the interior of the lower portion of the plunger means at their lower ends. The gauge operates by moving the plunger means downward into a bottom portion of the container shaped correspondingly to the lower portion of the plunger means which holds a limited quantity of mercury disposed below an oil bath. The bell or bulb-shaped lower portion of the plunger means is lowered into the oil bath until it contacts the mercury, at which time the mercury acts as a piston to push the oil up into the capillaries until the zero level of the reference capillary is reached, at which point the measuring capillary may be read to obtain the system pressure.

3,768,313

METHOD OF DETERMINING THE RISK OF EXPLOSION OF A PREFERABLY GASEOUS MEDIUM AND APPARATUS FOR CARRYING OUT THIS METHOD

Stig R. Johansson, Jonkoping; Lars B. Johnsson, Hovslatt, and Karl-Gustav A. Strid, Karlstad, all of Sweden, assignors to Industrilaboratoriet AB, Jonkoping, Sweden

Filed Nov. 30, 1971, Ser. No. 203,180
Claims priority, application Sweden, Dec. 2, 1970, 7875/70
Int. Cl. G01n *25/54*
U.S. Cl. 73—432 R **14 Claims**



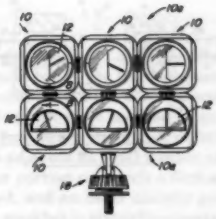
The risk of explosion of a preferably gaseous medium is determined by measuring a parameter, which is determinative of the inflammability of the medium, by means of a probe, which comprises an ignition chamber and an ignition initiator in said chamber. A successively varied amount of energy is sequentially supplied to the ignition initiator, until the amount of energy, which is operatively therein, has reached such a level that the medium in the ignition chamber only just ignites. The actuation level, at which the medium in the ignition chamber actuated by the ignition initiator ignites, constitutes a measure of said parameter of the medium and is determined by adequate, preferably electrical means.

3,768,314

MODULAR GAUGE HOUSING

Robert H. Metzler, Hanover Park, and Jerome N. Zurek, Chicago, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Jan. 20, 1972, Ser. No. 219,456
Int. Cl. G01d *11/30*; A47b *87/02*
U.S. Cl. 73—432 AD **13 Claims**



The following specification describes front and rear annular housing sections forming a housing assembly for receiving a gauge with the bezel of the gauge held between the two sections, and the gauge dial viewed in the annular opening of the front section. A clip inserted in a wall passageway of two adjacent rear housing sections has spaced walls overlapping interior surfaces of the two housing sections to join together respective housing assemblies and form a cluster. A rear panel closes off the rear of the rear section to hide the interior of the assembly, and a mounting clip engaging a rear housing section passageway has a swivel support to enable the entire cluster to be carried at a desired angle from a support.

3,768,315

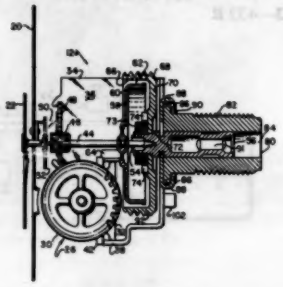
SPEEDOMETER AND ODOMETER ASSEMBLY

Patrick L. Powell, Franklin Park, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Division of Ser. No. 114,193, Feb. 10, 1971, Pat. No. 3,693,459. This application May 30, 1972, Ser. No. 257,706

Int. Cl. G01p *3/49*

U.S. Cl. 73—490 5 Claims



The following specification describes a speedometer having a worm gear on the field cup of the magnet driving the speed cup for simultaneously driving an odometer. In addition, the speedometer is provided with a one piece stamped U-shaped bracket for supporting the odometer and cross shaft transmitting movement from the field cup to the odometer with a tubular element fixed to the bracket for rotatably supporting the magnet shaft and cooperating with the bracket to prevent axial separation of the magnet shaft. The odometer dial brackets are positioned to form stops for the speed cup.

3,768,316

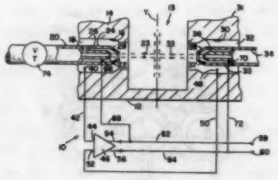
FLUERIC DIRECT-IMPACT MODULATOR ACCELEROMETER

Joe S. Hunter, Huntsville; Escar L. Bailey, Athens, and Little J. Little, Huntsville, all of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 18, 1972, Ser. No. 254,583

Int. Cl. G01p *15/02*

U.S. Cl. 73—515 1 Claim



A flueric accelerometer empolying direct-impact fluid modulation for measuring acceleration. The accelerometer includes a housing that defines a fluid impact chamber. Two input tubes having collinear longitudinal axes inject two fluid jets into the impact chamber so that the two jets meet head on and form a radial flow in the impact chamber. Two receiving chambers are provided, one around each input tube, that captures some of the radial flow. Acceleration or deceleration forces will change the momentum flux of either or both of the jets causing the balance point of the radial flow to move; which in turn changes the amount of radial flow captured by the output receivers and thus causes a pressure differential to exist between the two output receivers. Pressures in the output receivers are detected and a signal indicative of the pressure in each receiver is applied as inputs to a fluid servo amplifier. The amplifier has two outputs that are applied to the power jets to increase the momentum of one of the power jets, as required, and bring the radial flow to a balanced position.

3,768,317

ACCELERATION METER

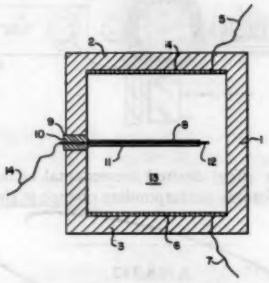
Cornelis M. Verhagen, Heemstede, Netherlands, assignor to Datawell B. V., Haarlem, Netherlands

Filed Aug. 28, 1970, Ser. No. 67,956

Claims priority, application Netherlands, Aug. 28, 1969, 6913191

Int. Cl. G01p *15/12*

U.S. Cl. 73—516 5 Claims



The invention relates to an acceleration meter consisting of a vessel filled with electrically conducting liquid which vessel has a cylinder wall and two end walls perpendicular to said cylinder wall, which end surfaces form two fixed electrodes, a third electrode being resiliently mounted between the two fixed electrodes. According to a further elaboration of the invention it is possible to provide a small side-space communicating with the straight cylinder space, in which small side-space the third electrode is fixedly mounted and from which side-space the said electrode protrudes into the cylindrical space.

3,768,318

RAPID-RELEASE ESCAPEMENT FOR TIMING PROGRAMMERS

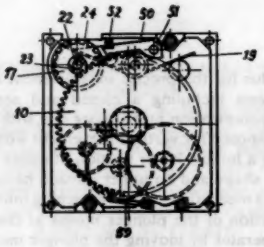
Renato Gazzani, via Maria 10C, Frosinone, Italy

Filed Feb. 16, 1972, Ser. No. 226,910

Claims priority, application Italy, Feb. 27, 1971, 48687

Int. Cl. G05g *21/00*

U.S. Cl. 74—3.52 8 Claims



A rapid-release escapement according to the invention comprises a wheel having two rings of teeth, which is driven by a driving toothed wheel provided with an axial pin having a short nib and a long nib, opposite by 180°, the first of which engages the lower ring of teeth and the second of which engages both rings of teeth of said double toothed wheel. A stopping lever device is provided for stopping said double

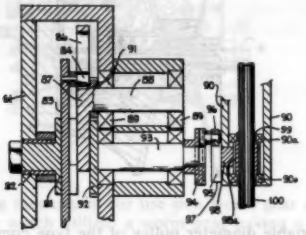
toothed wheel, said stopping lever device having two thin vertical ribs adapted to engage the teeth of said double toothed wheel.

3,768,319

STATOR WINDING APPARATUS

John F. Lill, Ft. Wayne, Ind., assignor to Windamatic Systems, Inc., Ft. Wayne, Ind.

Filed Dec. 3, 1971, Ser. No. 204,652
Int. Cl. F16h *21/00*
U.S. Cl. 74—20 15 Claims



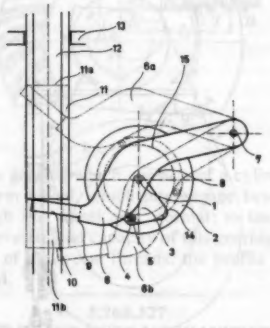
Disclosed is a stator winding apparatus utilizing a uniformly rotating crank member, a connecting rod attached to the crank member, a pivot support for the connecting rod permitting longitudinal sliding motion of the rod with respect to the pivot. A driven member mounted for rotation is connected to the rod by a pin and slot connection. The uniform velocity rotation of the crank is converted into intermittent, non-uniform velocity rotation of the driven member. Rotation of the driven member is utilized to provide the oscillating motion for the winding head without use of a barrel cam as heretofore thought necessary in the prior art.

3,768,320

MECHANISM FOR LOWERING AND RAISING CLOCKWORK PARTS INTO AND OUT OF A WORKING VAT

Amedee Pons, 21 Ave. Chamier Montauban, Tarn-et-Garonne, France

Continuation of Ser. No. 87,729, Nov. 9, 1970, abandoned.
This application May 24, 1972, Ser. No. 256,615
Int. Cl. F16h *25/08*; G04d *3/08*
U.S. Cl. 74—53 1 Claim



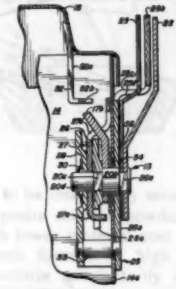
A machine for cleaning and rinsing clockwork parts wherein the support carrying said parts assumes a relative vertical and angular movement with reference to the vats to be used in succession. The relative vertical movement is controlled by a rotary crank raising and sinking a pivoting lever during each of its revolutions so as to make a member reciprocate vertically to produce the desired relative movement, the angular movement of the crank producing the vertical movement, corresponding to the removal of the parts out of a vat and to their draining being longer than the opposite movement returning the parts into the next vat whereby a longer draining time is allowed.

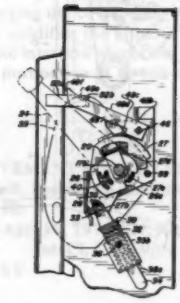
3,768,321

SAFETY SWITCH OPERATING MECHANISM

Russell Cox, Frankfort, Ky., assignor to Square D Company, Park Ridge, Ill.

Filed Feb. 28, 1972, Ser. No. 229,896
Int. Cl. F16h *21/44*
U.S. Cl. 74—97 18 Claims





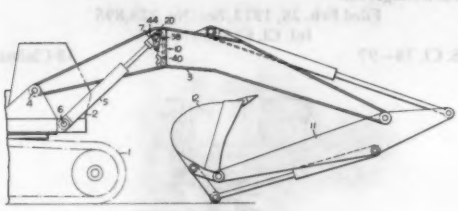
A drive pin is provided with an outer non-circular portion on which two handle halves are fixedly mounted, an outer circular portion pivotally mounted in a side wall of a switch box and in a handle lock-off plate secured to an outer surface of the side wall and having a drive bar for switch blades pivotally mounted thereon adjacent an inner surface of the side wall, an inner non-circular portion on which a first actuating member is fixedly mounted, and an inner circular portion on which a second actuating member is pivotally mounted and which is itself pivotally mounted in a bracket secured to the inner surface of the side wall. A front portion of the handle lock-off plate is outwardly offset from a rear portion by which the plate is secured to the side wall, an offsetting portion is provided with a slot, and an inner one of the handle halves extends through the slot. The side wall is inwardly embossed around the drive pin to provide a recess between the side wall and the handle lock-off plate, and an annular seal is disposed in the recess in engagement with the outer circular portion of the drive pin. A thin plastic washer is disposed on the drive pin between the inner handle half and the handle lock-off plate. The first and second actuating members are connected by a lost-motion connection. The second actuating member is provided with an over-center spring driving means and with an aperture through which the blade drive bar extends.

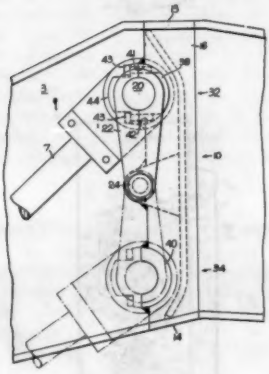
3,768,322

MEANS FOR CONNECTING HYDRAULIC CYLINDER TO MOVABLE COMPONENT

Herbert L. Eckert, Cedar Rapids, Iowa, assignor to Harnischfeger Corporation, W. Milwaukee, Wis.

Filed Sept. 8, 1972, Ser. No. 287,586
Int. Cl. F16h 21/44
U.S. Cl. 74—102 12 Claims





A back hoe comprises a boom and a boom hoist cylinder having an extendable and retractable cylinder rod for raising and lowering the boom. The end of the cylinder rod is pivotably connectable by a pin to either an upper or lower pin attachment means on the side of the boom. The pin is mounted on a lock plate which is pivotably connected by a bolt to the side of the boom and is always engaged in a hole in a bushing on the cylinder rod. Consequently, the cylinder rod end can be selectively connected to either the upper or lower pin attachment means on the boom without the need to completely disconnect the cylinder rod from the boom. In one embodiment, each pin attachment means includes a solid inner boss having a hole therein and a split outer boss having a detachable cap. After removing the detachable cap from the split boss and loosening the bolt, the pin is moved axially to disengage the pin from the hole in the solid boss and the cylinder rod is operated to swing the pin into position for engagement with the other pin attachment means, whereupon the pin is moved axially into engagement with the hole in the other solid boss, the cap is replaced and the bolt retightened.

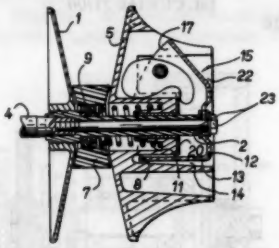
In another embodiment each pin attachment means includes a split inner boss and a split outer boss and detachable caps therefor. After removal of the caps and loosening of the bolt, the cylinder is operated to swing the pin into engagement with the other pin attachment means, whereupon the caps are replaced and the bolt retightened.

3,768,323

SPEED RESPONSIVE VARIABLE DIAMETER PULLEY

Michel Houle, Wickham, Quebec, Canada, assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Dec. 27, 1971, Ser. No. 212,227
Int. Cl. F16h 55/52
U.S. Cl. 74—230.17 E 7 Claims



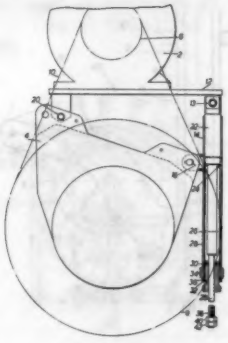
A variable diameter pulley of the type commonly used to form an automatic transmission for snowmobiles and including centrifugal weights wherein the improvements includes dissociating the rotative driving function from the axial displacement function, both heretofore imposed to the centrifugal weights. A pulley having a fixed and an axially displaceable flanges, speed responsive devices arranged to cause axial displacement of the axially displaceable flange and a holding member bodily fixed for rotation with the fixed flange, slidably and drivingly engaging the displaceable flange to allow axial displacement of the latter relative thereto, while driving the same. The displaceable flange and the holding member form wall portions radially converging towards each other to define cavities safely enclosing centrifugal weights therein.

3,768,324

AUTOMATIC BELT TENSIONING DEVICE

Stamford Robert Francis Vanderstegen-Drake, Newbury, England, assignor to Plenty & Son Limited, Berkshire, England

Filed Mar. 7, 1972, Ser. No. 232,476
Claims priority, application Great Britain, Mar. 11, 1971, 6,591/71
Int. Cl. F16h 7/10
U.S. Cl. 74—242.15 R 3 Claims



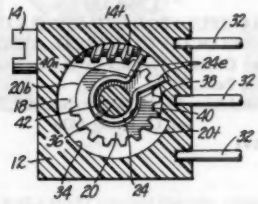
An automatic belt-tensioning assembly for drive systems including a motor driving another device by means of a belt and pulleys, in which the motor and the driven device are mounted for relative movement, and an adjustable spring assembly urges them apart so as to provide a pre-settable tension in the belt.

3,768,325

MULTITURN ADJUSTMENT POTENTIOMETER RATCHETING MECHANISM

Lawrence Kucharski, Jr., Colton, Calif., assignor to Bourns, Inc., Riverside, Calif.

Filed Sept. 15, 1972, Ser. No. 289,397
Int. Cl. F16h 35/18, 57/00, 55/04
U.S. Cl. 74—405 6 Claims



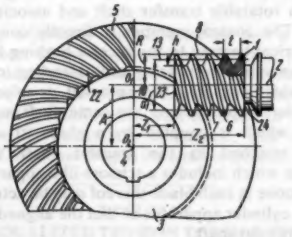
A ratcheting mechanism for use in a worm gear actuated potentiometer which utilizes a worm gear having a circumferential portion of the teeth thereof removed, i.e., a blank area, a worm screw having threads for engaging the teeth of the worm gear, and a ratcheting structure including a stop member and a resilient member. One of the two ratcheting structure members is attached to a housing or other nonmovable structure and the other is attached to the worm gear at locations such that the resilient member will engage the stop member whenever the threads of the worm screw engage a tooth of the worm gear adjacent the blank area so as to provide ratcheting.

3,768,326

ORTHOGONAL SKEW-AXIS GEARING

Anatoly Konstantinovich Georgiev, ulitsa 9 Podlesnaya, 54, kv. 12, and Veniamin Iosifovich Goldfarb, pereulok Shkolny, 60, kv. 53, both of Izhevsk, U.S.S.R.

Filed Dec. 16, 1971, Ser. No. 208,838
Int. Cl. F16h 1/16, 55/04
U.S. Cl. 74—425 3 Claims



A skew-axis gearing which consists of a cylindrical worm and a flat worm wheel, which interengage beyond a plane passing through the wheel axis, normal; to the worm axis. To achieve elevated load capacity of this gearing in its action by either side of the worm threads, the profile of the latter is made curved.

3,768,327

COMPOSITE HEAVY-DUTY MECHANISM ELEMENT

William M. Dunn, Farmington, and Myron C. Sarnes, Northville, both of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Division of Ser. No. 95,299, Dec. 4, 1970, Pat. No. 3,665,585.
Filed Mar. 20, 1972, Ser. No. 235,939
Int. Cl. F16h 55/04
U.S. Cl. 74—434 2 Claims

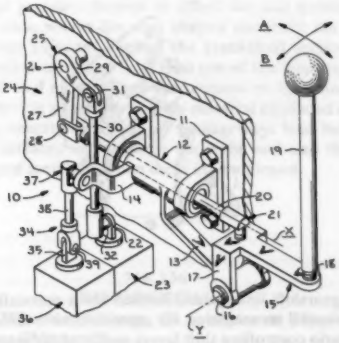
A composite mechanism element, such as a composite bevel element (FIGS. 1 to 6 inclusive), has its working or load-bearing portion or portions composed of sintered powdered high-performance alloy while its supporting portion not subjected to concentrated or heavy loads, is made of an inexpensive base metal, such as sintered powdered iron. The outer load-bearing portion of the composite bevel element and the hollow frustoconical inner supporting portion (FIGS. 5 and 6) are separately briquetted from high performance alloy powder and low performance metal powder respectively and separately sintered after which the low performance inner supporting portion is pressed in the high performance toothed outer portion so as to be inseparably secured thereto. The low-performance and high-performance portions separately sintered and thereafter are pressed together in an assembling operation which causes the high performance and low performance portions of each race to be inseparably secured to one another. The resulting composite sintered powdered mechanism elements are of much lower material cost than corresponding mechanism elements formed of high performance alloy throughout yet perform satisfactorily and have sufficient strength and durability for most purposes. These heavy-duty mechanism elements may be used as they are if of satisfactory density for their intended uses, or they may be further densified by being subjected to an additional hot forging operation which rams the portions together under high heat and pressure in the forging die of a forging press and thereby not only substantially solidifies the hitherto porous structure but also causes metallic interflow across the junction or boundary between the two portions so as to still more tenaciously join them together.

3,768,328

MULTI-MOVEMENT SINGLE LEVER CONTROL

Trevor G. Campbell, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 10, 1972, Ser. No. 242,307
Int. Cl. G05g 9/04
U.S. Cl. 74—471 XY 11 Claims



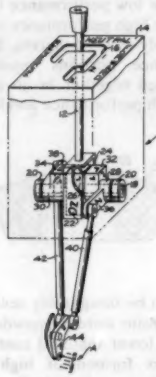
A single lever control comprises a tubular bellcrank pivotally mounted on a stationary support and a handle pivotally mounted to a first arm of the bellcrank. A connecting rod is universally connected to the handle and extends through the bellcrank for attachment to the stem of a first control valve. A second arm of the bellcrank is pivotally connected to the stem of a second control valve whereby the handle may be actuated to selectively actuate the first control valve and/or the second control valve.

3,768,329

CONTROL MECHANISM FOR POWER SHIFT TRANSMISSION

Glen S. Comer, Jr., Peoria, Ill., and Thomas E. Allen, Mustang, Okla., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 28, 1971, Ser. No. 148,055
Int. Cl. G05g 7/00
U.S. Cl. 74—477 **8 Claims**



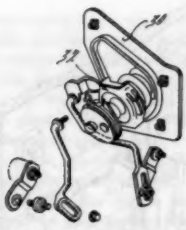
A shift lever for a transmission having forward and reverse gears is arranged to move in a substantially U-shaped path for controlling the transmission. The shift lever is operatively connected through a linkage system which provides for translation of the substantially U movement of the shift lever to a straight line motion at the transmission shift member.

3,768,330

ANTI-RATTLE GEARSHIFT LINKAGE MECHANISM FOR A MANUALLY CONTROLLED AUTOMOTIVE POWER TRANSMISSION MECHANISM

James T. Gejoff, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 4, 1972, Ser. No. 241,027
Int. Cl. G05g 9/12
U.S. Cl. 74—484 **4 Claims**



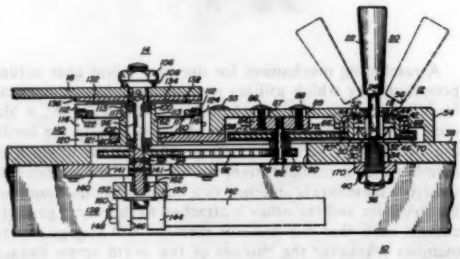
A gearshift linkage mechanism for a manually-controlled, three-speed transmission for an automotive vehicle including two ratio controlling shift levers mounted for rotary oscillation on the base of an automotive vehicle steering column, a gearshift selector sleeve shaft journalled for oscillatory and translatory movement on the steering column, one lever being adapted to control ratio changes between the low ratio and reverse drive ratio and the other lever being adapted to control ratio changes between the intermediate ratio and a high speed ratio, a bearing supporting rotatably the gearshift levers on the base of the column, a pair of clutch keys secured to the shift selector shaft, registering clutch keyways formed in each shift lever, a cam surface formed on one key which is adapted to register with a corresponding cam surface on one margin of the intermediate and high shift lever and spring means for urging the selector shaft and cammed key into engagement with the cooperating surface of the intermediate and high shift lever thereby preventing unwanted lost motion and rattling of the gearshift linkage when the transmission mechanism is conditioned for high speed ratio operation.

3,768,331

MICROMANIPULATOR UTILIZING A CONSTANT VELOCITY UNIVERSAL JOINT

Harold Lindsay Christy, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 17, 1972, Ser. No. 307,757
Int. Cl. G05g 1/00
U.S. Cl. 74—491 **9 Claims**



A precision alignment fixture which linearly translates lateral and angular motion of a single control member to a rotatable transfer shaft. A main spherical bearing has a cylindrical hole therein, and a bushing having a flange is fitted within the hole. A spherical pivot bearing having a mounting shaft affixed thereto is captured within the bushing by the flange and by a control member shaft also fitted within said bushing. The main spherical bearing pivots on the firmly mounted pivot bearing and fits snugly within a second bushing so that a swiveling motion of the control member is directly transmitted by the second bushing to a housing member which supports a rotatable transfer shaft and associated mounting bearings. The control member is directly coupled from the main spherical bearing to the second bushing by pins affixed to the main spherical bearing and extending into the second bushing, which engages a first sprocket, coupled by a chain to a second large sprocket on the same shaft as a small third sprocket, which is coupled by a chain to a large fourth sprocket attached to the transfer shaft. A centralizer mechanism which includes a scissors-like apparatus having an aligned groove in each blade thereof may be actuated by an attached air cylinder apparatus so that the aligned grooves close upon the transfer shaft.

3,768,332

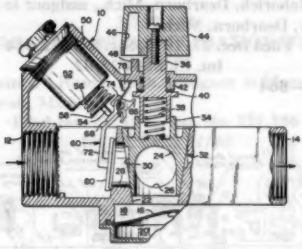
DUAL LEVER MECHANISM

Jay R. Katchka, Cypress, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 162,556, July 14, 1971, Pat. No. 3,747,617. This application Feb. 20, 1973, Ser. No. 333,590
Int. Cl. G05g 1/00
U.S. Cl. 74—491 **2 Claims**

Dual lever mechanisms especially well suited for use in a combination control device for gas burner apparatus having a reset operator, an electromagnetic holding device and a safety valve member, the dual lever mechanisms including a first lever having one arm actuated by the reset operator, a second arm engaging the magnet armature and a third arm spaced from the second arm and movable into engagement with a second lever for the safety valve member and pivoted in common with the first lever; lost motion is provided between the

first and second levers such that the second lever is not engaged by the third arm of the first lever until the final movement of the reset operator whereupon the valve member is

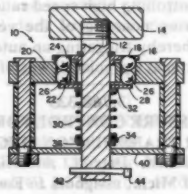


lifted from its seat a slight amount thereby permitting the pressure differential experienced across the valve to be balanced. A torsion spring for the second lever thereafter moves the second lever so as to fully open the safety valve.

3,768,333
DETENT MECHANISM

Donald E. Bidwell, Lemon Grove, Calif., assignor to J. C. Pemberton, San Diego, Calif.

Filed Oct. 17, 1972, Ser. No. 298,206
Int. Cl. G05g 5/06
U.S. Cl. 74—527 **3 Claims**

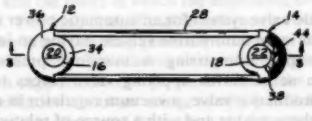


A rotatably adjustable shaft is detented into a number of positions by sets of spring-pressed ball detents. Each set of balls consists of a pair of balls which, through rolling friction, counter rotate, so that a spring pressed washer that biases the balls into detent position rotates with the shaft. In this manner sliding friction is substantially eliminated, with consequent elimination of frictional drag as the shaft is turned.

3,768,334
LOAD EQUALIZED TENSION TORSION TIE BAR

Richard J. Didinger, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed June 26, 1972, Ser. No. 266,012
Int. Cl. F16c 7/04
U.S. Cl. 74—579 R **7 Claims**

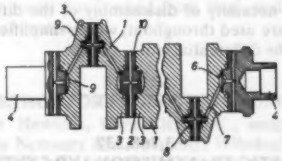


A laminated tie bar or coupling particularly adapted to interconnect a helicopter rotor arm and rotor blade is provided with a pair of spaced apart end bushings interconnected by an endless belt. A pliable material interposed between the belt and each end bushing provides a bearing surface therebetween which deforms under unequal pressure or load distribution as a result of angular movement of an end bushing causing a bending moment on the belt which deformation redistributes and equalizes the pressure or load imposed on the belt.

3,768,335
CRANKSHAFT COMPOSED OF A PLURALITY OF SECTIONS WELDED TOGETHER

Karl Mayer, Nurnberg, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft Werk Nurnberg, Nurnberg, Germany

Filed May 11, 1971, Ser. No. 142,275
Claims priority, application Germany, May 13, 1970, P 20 23 364.1; Feb. 15, 1971, P 21 07 130.7
Int. Cl. F16c 3/14
U.S. Cl. 74—597 **5 Claims**



The specification discloses a crankshaft composed of a plurality of sections which are welded together and a method of making the crankshaft in which each said crankshaft section comprises a web of the crankshaft and at least a part of the journal portions on opposite sides thereof. In making the crankshaft, the sections are placed in end to end relation in the proper angularly oriented positions and are fixedly held relative to each other during the welding operation. The welding can be accomplished by electron beam welding or the welding can be accomplished by interposing disc shaped members between the opposite end of adjacent ones of the sections and then rotating the members and sections relatively while exerting axial pressure thereon to effect the said welding. At least in the case where the disc shaped members are interposed between adjacent ones of the crankshaft sections, an annular chamber is formed in at least one of the interengaging faces of each said member and the sections on opposite sides thereof to provide a space to receive material displaced during the welding operation. Lubricant passageways lead between the journal surfaces and through the webs and also through the disc shaped members when these are employed.

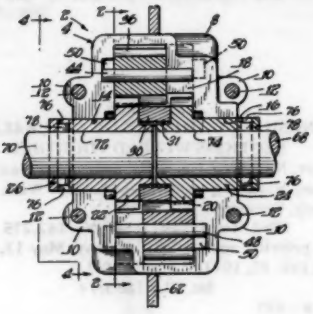
3,768,336
DIFFERENTIAL

Richard F. Wharton, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed June 29, 1971, Ser. No. 157,953
Int. Cl. F16h 1/42
U.S. Cl. 74—714 **1 Claim**

A differential has a housing with two coaxial sun gears and two pairs of planetary pinions carried by the housing. The planetary pinions of each pair mesh with each other as well as with their respective sun gears so that two pinions, namely one in each pair, are capable of rotation in an orbit about its associated sun gear. The planetary pinion pairs transmit driving torque to the sun gears upon rotation of the housing yet permit

differential rotation of the sun gears. Furthermore, the sun gears integrally include hollow tubular hubs that project outwardly from opposite sides of the housing so that the shaft or



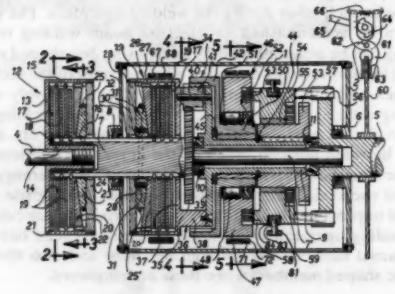
axles to be driven can be quickly connected to the hubs without the necessity of disassembly of the differential unit. Spur gears are used throughout, which simplifies and reduces the cost of the differential unit.

3,768,337

AUTOMATIC TRANSMISSION AND CENTRIFUGAL CLUTCH ASSEMBLIES

Donatien Racicot, 618 Main St., St. Paul D'Abbotsford, Quebec, Canada

Filed May 22, 1972, Ser. No. 255,583
Int. Cl. F16h *3/74, 57/10*
U.S. Cl. 74—752 E **9 Claims**



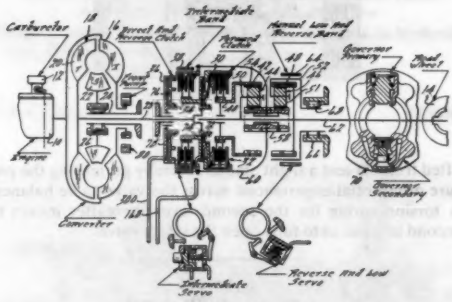
A simple automatic transmission adapted to be used on snowmobiles and other vehicles and to provide low and high speed forward drive, reverse drive and neutral and a centrifugal clutch having radially wedging members and friction discs adapted to be axially displaced by the wedging members in response to centrifugal action on the latter. An automatic transmission including a simple planetary gear assembly having a sun gear driven by the input shaft, a planet carrier rotatably controlled by a centrifugal clutch selectively restrained by a first brake and a ring gear associated to a second brake to be selectively held against rotation to produce forward drive and to be freed to produce reverse drive; a sliding gear unit adapted to transmit the drives to an output shaft and to produce a neutral and a simple shifting control to selectively actuate the sliding gear unit and the brakes.

3,768,338

COASTING DOWNSHIFT CONTROL VALVE FOR AN AUTOMATIC POWER TRANSMISSION CONTROL VALVE CIRCUIT

Joseph P. Bahorich, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1971, Ser. No. 212,314
Int. Cl. B60k *21/02*
U.S. Cl. 74—864 **8 Claims**



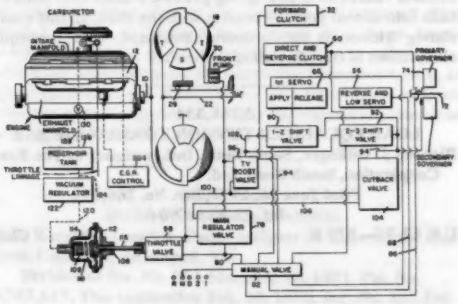
A control valve circuit for an automatic power transmission mechanism in an automotive vehicle driveline having an internal combustion engine, including a pair of transmission ratio shift valves located in fluid pressure circuitry that distributes selectively actuating pressure to the clutches and brakes to control transmission ratio changes wherein provision is made for interrupting distribution of a vehicle speed signal to the shift valves for controlling high speed ratio changes when the vehicle speed during coasting of the vehicle falls below a calibrated value thereby triggering an automatic downshift to an intermediate ratio at a precise downshift point.

3,768,339

THROTTLE PRESSURE CONTROL FOR AN AUTOMATIC POWER TRANSMISSION MECHANISM

Jack A. Kolehmainen, Detroit, and George E. Lemieux, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1971, Ser. No. 212,316
Int. Cl. B60k *21/00*
U.S. Cl. 74—864 **6 Claims**



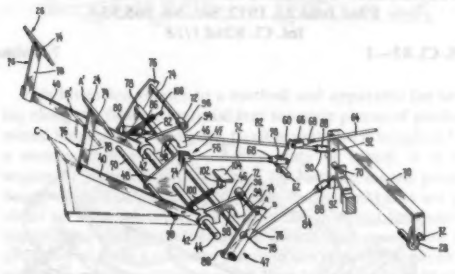
A throttle valve system for an automatic power transmission mechanism in an automotive vehicle having an internal combustion engine comprising a manifold pressure-operated diaphragm actuator for applying valve forces to a throttle pressure modulator valve, a vacuum regulator in communication with the actuator and with a source of relatively constant negative pressure for distributing to the actuator a controlled vacuum that is related in magnitude to engine throttle displacement, the regulator being connected mechanically to the throttle whereby the actuator produces a transmission throttle

valve signal that is independent of variations in engine intake manifold pressure due to the effects of engine exhaust emission control devices.

3,768,340
VEHICLE SHIFT AND ACCELERATION CONTROL SYSTEM

Herman Heintz, Livonia, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed Jan. 27, 1972, Ser. No. 221,156
Int. Cl. B60k *21/00*
U.S. Cl. 74—865 5 Claims

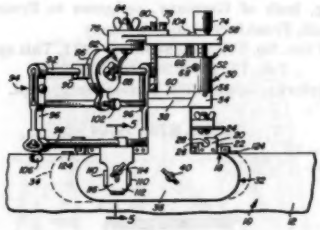


A pedal control system having a linkage connecting each pedal to both the transmission and the accelerator of a vehicle, with both pedals simultaneously operative for accelerating the engine without shifting the transmission, permits operation of each pedal alone for shifting the transmission and accelerating the engine independent of the other pedal whereby movement of one pedal does not cause movement of the other pedal.

3,768,341
CHAIN SAW SHARPENING DEVICE

James W. Fitzpatrick, Potomac, Mont.

Filed Dec. 17, 1971, Ser. No. 209,294
Int. Cl. B23d *63/08, 63/00*
U.S. Cl. 76—31 R 8 Claims

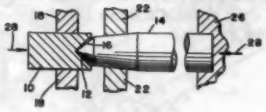


A support structure including a base for removable securement to the bar of a chain saw with the bar extending in a first direction and disposed in a first plane. The base includes an adjustable longitudinally extendible support arm supported at one end from the base for oscillation about an axis transverse to the arm and the plane in which the associated chain saw bar is disposed. The base is oscillatable between a first limit position with the arm extending generally normal to the bar and a second position inclined relative to that limit position. A support head is supported from the other end of the arm for adjustable oscillation about an axis generally paralleling the arm and the mount is supported from the head for adjustable angulation about an axis transverse to the axis of oscillation of the head. Also, an elongated file support assembly includes means for stationarily supporting an elongated file therefrom with the file extending longitudinally of the support assembly and the support assembly is supported from the mount for oscillation about and guided shifting along an axis extending longitudinally of the support assembly.

3,768,342
CONNECTING METAL ELEMENTS AND PRODUCTS THEREOF

Ernest A. Kroder, Hellam, Pa., assignor to Dentsply Research & Development Corp., Milford, Del.

Division of Ser. No. 50,444, June 29, 1970, Pat. No. 3,670,416.
This application Feb. 15, 1972, Ser. No. 226,559
Int. Cl. B21k *21/00*; B26d *1/00, 1/12*
U.S. Cl. 76—101 A 6 Claims

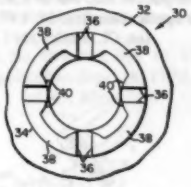


A method of connecting metal elements by a resistance welding process to produce a high strength joint and particularly to connect a refractory type pre-formed carbide head to a shank of a dental bur formed from steel, and the product formed by such method.

3,768,343
METHOD FOR PRODUCING A PUNCH

Curtis Owen Hawkins, Cove City, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 14, 1972, Ser. No. 262,493
Int. Cl. B21k *5/20*
U.S. Cl. 76—107 S 2 Claims



A method for producing a punch for single-step forming a spinneret nozzle having a plurality of slot-like segments includes broaching an appropriately sized hole drilled into one end of soft punch stock to form the inside dimensions of the segments, then machining the punch stock to the outside dimensions of the segments and slotting and removing a portion of the punch at its tip end to form a plurality of male arcuate die segments. The tool is then heat treated.

3,768,344
MANUFACTURE OF EXTRUSION TOOLS

Edward George Feldcamp, Tudor Cottage Church End, Twyning, Tewkesbury, England

Filed Nov. 8, 1971, Ser. No. 196,467
Int. Cl. B21k *5/20*
U.S. Cl. 76—107 R 14 Claims

A method of manufacturing extrusion dies or "tools" produces a tool with an accurately and well-finished tool opening in an economic manner which allows relatively unskilled labour to be employed.

In the method of spark-erosion electrode is formed by machining an electrode blank to a profile complementary to the desired tool aperture, such machining employing a cutting tool which during the machining operation traverses in the general plane of the electrode, that is at right-angles to the direction in which the electrode enters the extrusion tool

blank during a subsequent spark-erosion step to produce an apertured tool blank. The side wall of the aperture is thereafter finished by forcing an abrasive compound through the tool. The abrasive compound is preferably a solid wax containing abrasive particles, and heat treatment of the tool blank may be effected before abrasion or between separate abrading steps.

The method is of particular application to the manufacture of tools for extruding aluminium sections.

3,768,345
LOCK NUT DRIVE HEAD

James E. Barnes, Middle Hoddam Road, Portland, Conn.

Filed Jan. 17, 1972, Ser. No. 218,234
Int. Cl. B25b *13/48*
U.S. Cl. 81—90 B 3 Claims

A spanner type drive head is presented for serrated lock nuts used in electrical terminal blocks, the drive head having teeth for mating with the serrations of the lock nut and also having an aperture or mouth to accommodate electrical cable in the terminal box.

3,768,346
ADJUSTABLE-PIVOT PLIERS

Charles J. Burthardt, 1800 Elizabeth Ave., Metairie, La.

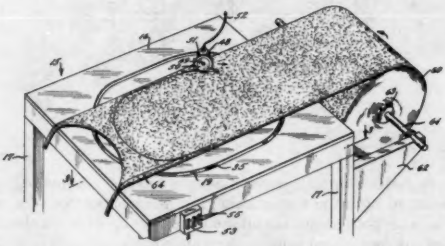
Continuation-in-part of Ser. No. 878,030, Nov. 19, 1969, abandoned. This application Oct. 21, 1971, Ser. No. 191,309
Int. Cl. B25b *7/04*
U.S. Cl. 81—401 1 Claim

A pair of pliers, having angled jaws, in which the two plier members are pivoted together by a screw adjustable pivot. One plier member is pivoted by a pivot pin fixed to a block defining an interiorly threaded passageway normal to said pivot pin. A bolt, rotatably mounted by upper and lower end bearings in a slot defined in the other plier member, is threaded complementary to said threaded passageway. The plier members are joined by the engagement of the threaded bolt in the threaded passageway. The upper end bearing is sized for rotation of the upper end of the bolt therein. The lower end bearing is smaller in diameter than the threaded intermediate section of the bolt and extends slightly beyond the lower end of said lower end bearing. A threaded extension of the lower end of the bolt engages a retaining knurled thumb nut to hold the bolt supported in its upper and lower end bearings without binding and with only slight axial movement. The pivot pin of the block is made slightly longer than the thickness of said one plier member at the pivot. A threaded extension of the pivot pin engages a retaining nut to hold said one member on the pivot pin without binding and with only slight axial movement. Said one member is recessed at the area of pivoting and the angled jaw of said other member is transversely displaced to bring, in combination, the respective angled jaws in opposition.

3,768,347
AUTOMATIC CARPET CUTTING MACHINE

Marvin C. Wade, 506 Mosedale Dr., and Lamar Montgomery, 932 Ave. E, both of Dalton, Ga.

Filed June 23, 1972, Ser. No. 265,954
Int. Cl. B26d *1/18*
U.S. Cl. 83—1 7 Claims

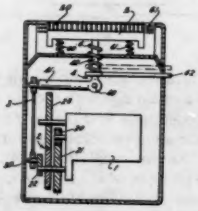


Apparatus for automatically cutting carpet material to a predetermined size and configuration includes a frame having a support surface with a cutting implement adjustably and movably mounted on top of the frame in engagement with the carpet material and a drive mechanism located below the surface for moving the cutting mechanism along a predetermined path of movement.

3,768,348
DRYSHAVER OPERATION

Arthur Braun, Koenigstein, and Friedrich Schreiber, Bad Homburg, both of Germany, assignors to Braun Aktiengesellschaft, Frankfurt Main, Germany

Division of Ser. No. 179,968, Sept. 13, 1971. This application Feb. 15, 1973, Ser. No. 332,750
Claims priority, application Luxembourg, Sept. 14, 1970, 61683
Int. Cl. B26b *19/04*
U.S. Cl. 83—13 9 Claims



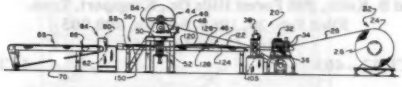
An electrically driven dryshaver has a shear system composed of an outer shear element and an inner shear element which cooperates with the outer shear element and at least one of these elements is driven for movement with reference to the other. The shear elements are biased into abutment with a force in excess of 4 kg/cm².

3,768,349

METHOD AND APPARATUS FOR SEVERING ELONGATED MATERIAL INTO PREDETERMINED LENGTHS

Ford B. Cauffiel, 4940 Homerdale Avenue, Toledo, Ohio

Filed Nov. 3, 1971, Ser. No. 195,140
Int. Cl. B26d 5/38
U.S. Cl. 83—42 20 Claims



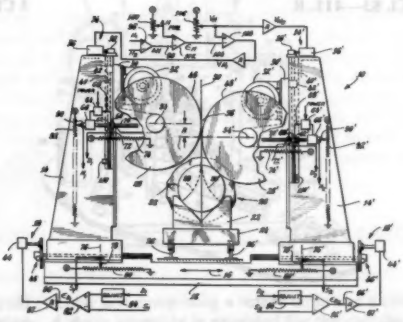
This invention relates to a method and apparatus for severing elongate, flexible material into separate pieces of predetermined lengths. The elongate, flexible material is supplied from a source at a constant, uniform rate of speed. It is subsequently engaged and retarded by suitable means prior to being severed in pieces by a stationary shear. Means are provided to form a curve or hump in the material between the supply source and the retarding means and means are also provided to form a curve or hump in the material between the retarding means and the shear. A loop is thereby formed at the first curved portion of the material when the material is retarded. A loop is also formed at the second curved portion of the material when it is being sheared. The double loop arrangement enables the constant, uniform drive to be employed and also the stationary shear to be used. The constant speed of the elongate material also improves the operation of the overall line, with fewer interruptions resulting, and enables the material to track better.

3,768,350

APPARATUS FOR CUTTING WORKPIECES

Leland E. Coulter, New Canaan, Conn., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed Mar. 21, 1972, Ser. No. 236,694
Int. Cl. B26d 3/16
U.S. Cl. 83—51 12 Claims



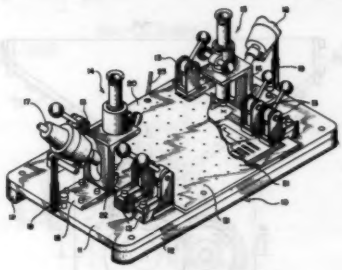
A machine for cutting workpieces such as castings or metal barstock is described wherein a pair of cutting wheels are controllably fed into the barstock to sever the end thereof with a single pass. The cutting wheels, which operate in a common plane, are located with their axes offset and their perimeter edges are located on a common straight cutting path. A lateral control to automatically maintain the cutting wheels on the path even though their diameters are worn down by the cutting operation and a vertical control to preserve the offset between the axes are described.

3,768,351

METHOD AND APPARATUS FOR FORMING HOLES IN A MATERIAL

William E. Stephan, Brookfield, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed May 8, 1972, Ser. No. 250,881
Int. Cl. B26f 1/02
U.S. Cl. 83—55 10 Claims



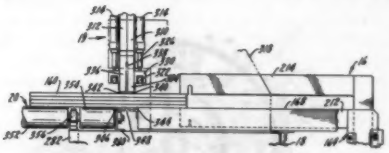
A method and apparatus of aligning photographic film used in the production of printed circuit boards and punching registery holes in specific relationship to the circuit patterns on them. Two or more alignment marks are exposed with the circuit or wiring pattern on a photographic material. After the necessary photographic processing techniques have been performed, the final photographic film which is to be used in the manufacture of the printed circuit board is placed on and aligned with respect to a punching apparatus and thereafter the required hole array is punched into the film.

3,768,352

METHOD AND APPARATUS FOR CUTTING PANELS

James W. Campbell, Forth Worth, Tex., assignor to Halton City State Bank, Fort Worth, Tex.

Division of Ser. No. 805,943, Feb. 17, 1969, Pat. No. 3,662,798. This application Sept. 10, 1970, Ser. No. 71,103
Int. Cl. B26d 7/06
U.S. Cl. 83—104 R 17 Claims



The method and apparatus for efficiently cutting accurately sized panels in an unlimited combination of sizes and shapes from larger sheets. The sheets are automatically counted and stacked on a gauge table, the stack is clamped by jaws which establish a reference line relative to a cutting station, and the stack is advanced along the table for accurately dimensioned rip cuts. One or more of these cut stacks are then moved on a rip run-out unit to a cut-off infeed and gauge table where they are automatically aligned, clamped to establish a second reference line, and accurately advanced to a cut-off station where cross-cut sawing produces finished panels. The stacks are moved and gauged by either digital or analog hydraulic servo motors which accurately position the reference lines relative to the saw stations by controlled deceleration of the load to stop the stacks. At each saw station holddowns prevent sheet displacement as the saw traverses. Each saw automatically senses cutting load and returns to its initial position immediately upon finishing a cut. Linear saw speed is controlled as a function of saw load. Means are provided to automatically remove trim and scrap.

3,768,353

CUTTING DEVICES

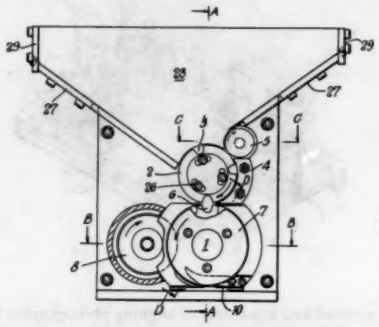
John Kendell Milner, Dorset, England, assignor to Brown and Williamson Tobacco Corporation, Louisville, Ky.

Filed July 6, 1971, Ser. No. 159,701

Claims priority, application Great Britain, July 6, 1970, 32559/70

Int. Cl. A24c 5/28

U.S. Cl. 83—161 3 Claims



An apparatus for cutting cylindrical rods into shorter predetermined lengths, each rod being passed a predetermined number of times past a cutting blade and moved axially against an end stop between each successive cut. Each rod is supplied from a hopper by a grooved rotating feed drum to a grooved rotating cutting drum and the number of grooves in each drum and the relative rotational speed ratios of the drums can be varied in order to modify the number of sections into which each rod can be divided by successive passes of the cutting blade.

3,768,354

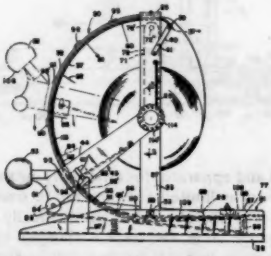
TICKET DISPENSING DEVICE

Vern K. Mason, Grand Forks, N. Dak., assignor to Edgar A. Berg, Grand Forks, N. Dak.

Filed Mar. 24, 1971, Ser. No. 127,467

Int. Cl. B26d 5/20

U.S. Cl. 83—222 5 Claims



The invention comprises a horizontally elongated channel member with a pair of upright straps mounted to opposite sides thereof, and extending vertically upward therefrom. A second elongated channel member is disposed within the first channel member and pivotally mounted to the first channel member. The pivotally mounted second channel member has a blade at its forward end. A C-shaped strap member has its upper end connected to the upper end of the upright straps and extends rearward about an arc with its lower end along the second channel member. A roll of tickets are mounted to the upright straps with the outer end of the roll of tickets extending across the top of the blade. An arm is pivotally mounted to the upright straps. Ticket advancing bracket means are mounted to the arm and are adapted to travel along the C-shaped strap with the arm engaging the tickets to advance the tickets across the blade in response to the arm movement Means are provided which stop the ticket advancing bracket means at the end of the ticket advance, while enabling the arm to continue onward to actuate the pivotal channel to cause the blade to severe the advanced tickets from the rest of the roll.

3,768,355

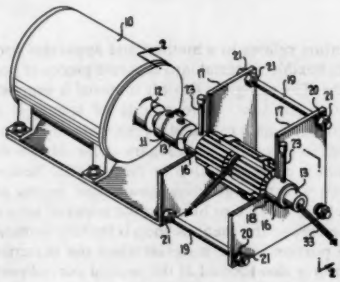
APPARATUS FOR CUTTING TOW INTO STAPLE FIBER

Earl T. Farmer, Rt. 3, Box 22 B 4a, Gate City, Va., and Garland B. Keith, 208 Forest Hills Dr., Kingsport, Tenn.

Filed Feb. 20, 1969, Ser. No. 800,905

Int. Cl. D01g 1/04

U.S. Cl. 83—403 4 Claims



An apparatus for cutting staple fibers to predetermine accurate lengths from tow or ropes comprising a power operated rotatable hollow shaft providing a passageway for the tow or rope, an exit opening for the tow, plurality of stationary knives positioned adjacent said exit opening whereby to impinge the front end of the tow against the knives to thereby cut the tow into fibers of uniform length.

3,768,356

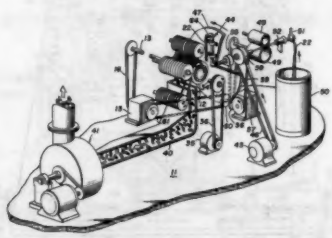
TOW CUTTER

James G. Gamble, Danielson, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed June 5, 1972, Ser. No. 259,892

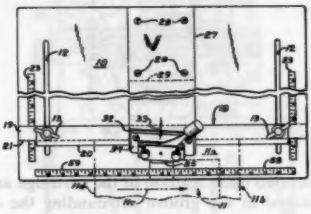
Int. Cl. B26d 7/06, 4/04

U.S. Cl. 83—411. R 5 Claims



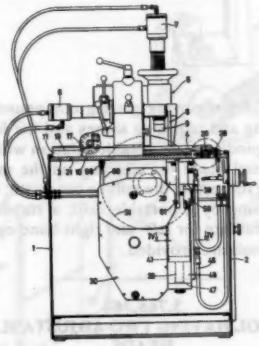
A tow cutter wherein a tow of filaments to be cut is laced around radially extending pins mounted on a rotating drum in such a manner that the tow extends in a zigzag configuration around the drum with spans of the tow extending longitudinally along the periphery of the drum. A plurality of rotating cutters extend into spaced slots in the periphery of the drum to sever the tow into small lengths as the spans of tow are carried past the cutters. Flexible belts engage the periphery of the drum between the slots therein to hold the tow between the belt and the periphery of the drum as the cutting operation is carried out.

3,768,357
MAT CUTTING APPARATUS
Morris M. McBride, 412 Oxford Road, Tower Lakes, Barrington, Ill.
Filed Sept. 29, 1972, Ser. No. 293,588
Int. Cl. B26d *3/02*
U.S. Cl. 83—438 10 Claims



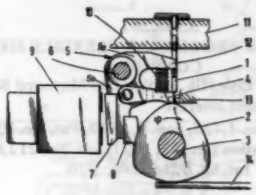
Apparatus is disclosed for cutting away the interior portion of a continuous mat at a 45° angle relative to the plane of the mat to provide a continuous border with a beveled inner edge. A flat bed receives the mat and a knife mount is cantilevered above the bed with the knife being pivotally mounted thereon. An adjustable edge guide is located above the bed and slides beneath the cantilevered mount to define the width of border cut. The mount holds the knife in a plane which is inclined 45° relative to the vertical and about 3° relative to the edge guide with the trailing edge of the blade spaced further from the edge guide than the leading edge.

3,768,358
COLD CIRCULAR SAW
Rudolf Zbinden, Zelgweg 4, Bremgarten, Switzerland
Filed Jan. 10, 1972, Ser. No. 216,390
Claims priority, application Switzerland, Jan. 13, 1971, 505/71
Int. Cl. B23d *45/14, 47/02*
U.S. Cl. 83—466.1 6 Claims



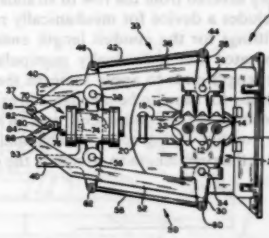
A cold circular saw comprising a rotary table and a circular saw blade. A drive assembly is provided for the circular saw blade, said drive assembly being connected with the rotary table by guide means and displaceable relative to the rotary table. A yoke serves to hold the workpiece to be processed, said yoke at least partially spanning the rotary table and being displaceable along two longitudinal guides. The guide means for the drive assembly embodies a single square column and components around the square column. A piston provided with a piston rod moves the drive assembly and is arranged within the square column, said square column having a cylindrical bore providing the working compartment for the piston. The square column is rigidly connected with the rotary table or with the drive assembly and the piston is rigidly connected with the drive assembly or the rotary table respectively.

3,768,359
CAM-CONTROLLED PERFORATORS
Rainer Koefferlein, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed Jan. 19, 1971, Ser. No. 107,668
Claims priority, application Germany, Jan. 30, 1970, P 20 04 287.9
Int. Cl. B26d *5/08*
U.S. Cl. 83—563 9 Claims



A code perforator wherein a single rotating perforator cam controls all the motions of a punch and employing a coupling rocker and a coupling element each of which slidably follow the perforator cam. The coupling rocker has a claw-shaped end which engages the punch in order to return the punch from the perforating position to an inoperative position. The cam advantageously has a peripheral camming profile composed of mutually symmetrically disposed sections for deflection of the coupling rocker and coupling element in phased relation to one another and to provide unambiguous stationary phases.

3,768,360
GLASS FEEDER SHEAR MECHANISM
Clarence A. Heyne, 9208 Elkhorn Drive, Sun City, Ariz.
Division of Ser. No. 138,887, April 30, 1971. This application Feb. 14, 1973, Ser. No. 332,262
Int. Cl. G03b *5/38*
U.S. Cl. 83—623 5 Claims



In preferred embodiments of the disclosure illustrated herein there is shown method and apparatus for shearing a plurality of gobs aligned in a row and issuing from a molten glass feeder. A pair of opposed shear carriages are provided which are movable toward and away from each other between open and shearing positions with respect to a row of gobs. A pair of opposing gob cutting surfaces for each gob to be severed are mounted on the opposed shear carriages. A lever is provided for each shear carriage having one end pivotally connected to its carriage and a portion remote from the carriage end pivotally supported on a frame structure. Each lever is operable to pivot the carriage toward and away from a gob shearing position. Means are connected to each of the shear

carriages for pivoting the shear carriages on their levers to translate the arcuate motion imparted to the carrier by the levers to substantially linear motion enabling the gob cutting surfaces to substantially simultaneously engage and sever the plurality of gobs. The motion translating means preferably includes a steering link having one end pivotally connected to the shear carriage a predetermined distance from the lever connection to the carriage, and a means for pivotally supporting the other end of the steering link a fixed distance from the pivotally supported other end of the lever. Novel blade structures, alignment and cooling features are also shown.

3,768,361

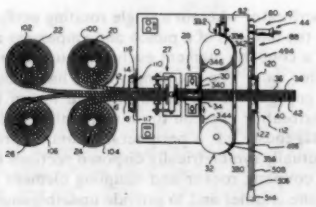
APPARATUS FOR PROCESSING FLEXIBLE METALLIC CONDUIT

William J. Fisher, Lisle, Ill., assignor to Maynard Braverman, Chicago, Ill., a part interest

Division of Ser. No. 1,735, Jan. 9, 1970, Pat. No. 3,672,015. This application Dec. 27, 1971, Ser. No. 212,805

Int. Cl. B26d *1/46, 5/20*

U.S. Cl. 83—796 **3 Claims**



A machine and method for mechanically and simultaneously sizing and cutting multiple strands of flexible metallic conduit to desired lengths, and for facilitating the application of a fitting to either end of the respective resulting lengths, in which the conduit is simultaneously drawn, by a roller drive, from a number of rolls of same in parallel strands and is fed past a cutting station the conduit length desired, after which feeding of the conduit strands ceases and the conduit lengths are simultaneously severed from the row of strands by sawing. The machine includes a device for mechanically rotating the individual end fittings for the conduit length ends, whereby the machine operator can individually manipulate the individual conduit length ends to apply same to the device to permit the end fitting for same to be mechanically rotated into its fully seated position in the conduit end, and an attachment that permits the conduit wiring to be mechanically fed into same and cut off at the right length to complete the conduit assembly.

3,768,362

GUN CONSTRUCTION FOR SEALING BETWEEN A GUN BARREL AND A CARTRIDGE HOLDER

Oskar Grimm, Epfendorf, and Ludwig Vorgrimler, Neckar, both of Germany, assignors to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft, Postfach, Karlsruhe, Germany

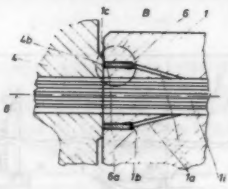
Filed July 25, 1972, Ser. No. 274,890

Claims priority, application Germany, Aug. 26, 1971, P 21 42 763.4

Int. Cl. F41d *7/04*

U.S. Cl. 89—26 **7 Claims**

A gun construction comprises a gun barrel having a projectile bore which is adapted to be aligned with a cartridge holder which may be a rotatable type and which includes an end face which abuts against the inner end face of the barrel. The cartridge holder is provided with an annular groove concentrically arranged around the cartridge receiving bore which carries sealing means, such as a sealing ring, which is ueged against the end face of the gun barrel by high-pressure gases



which are generated upon ignition of the cartridge and which are communicated to the groove surrounding the cartridge receiving bore through a passage connected to the cartridge receiving bore and the groove.

3,768,363

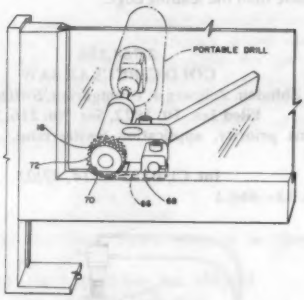
GLAZIER TOOL

Edd Tackett, Bel Air, Md., and Mary Elizabeth Broscoff, Alamogordo, N. Mex.

Filed Dec. 6, 1971, Ser. No. 204,991

Int. Cl. B23c *1/20;* **B27c** *5/10*

U.S. Cl. 90—12 R **7 Claims**



A power tool for removing glazing compound in preparation for deglazing and reglazing sashes and the like, comprising a side mill spindled in adjustable relation with a co-acting combination chisel blade for cleaning up the milled surface and depth gauge for setting the milling cut depth; the spindle is adapted for driving by a portable drill; a stabilizing handle, quick change structure for left- and right-hand operation, and special cutting tools are provided.

3,768,364

MACHINE TOOL HAVING TWO ADJUSTABLE CUTTER HEADS

James Kenneth Lancaster, and David William Yates, both of Coventry, Warwickshire, (Binley), England, assignors to Caludon Engineering Company Limited, Binley, Coventry, England

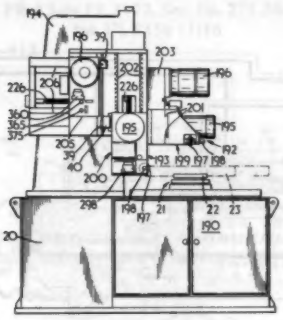
Division of Ser. No. 42,085, June 1, 1970. This application Nov. 24, 1971, Ser. No. 201,768

Int. Cl. B23c *1/14, 1/12*

U.S. Cl. 90—15 **6 Claims**

A machine tool, primarily for producing slots in a workpiece, has a rotatable work-table for supporting the workpiece, a cutter head on which a rotatable cutting tool is carried and a support frame for the cutter head. The cutter head is movable relative to the support frame and work-table drive means rotates the work-table in a series of accurately

predetermined increments or continuously. The increments of movement of the work-table are variable in magnitude and the



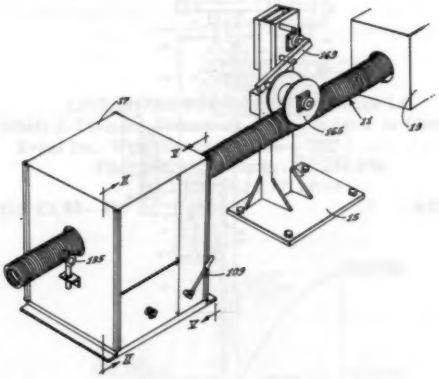
cutting tool makes a cut in the work-table between each incremental movement. Two cutter heads are normally provided both of which are carried on a common support frame.

3,768,365

APPARATUS FOR PROVIDING PARTIAL SLITS IN CORRUGATED DRAIN PIPE

Charles Wesley Howe, Tujunga, Calif., assignor to Vern Emery Company, Inc., Pacoima, Calif.

Filed Jan. 24, 1972, Ser. No. 220,354
Int. Cl. B23c *1/14*; B26d *3/06*; B23d *25/16*
U.S. Cl. 90—15.1 R 16 Claims



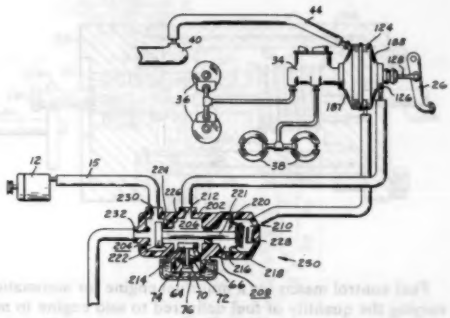
Apparatus for providing a plurality of partial slits about the periphery of continuous corrugated drain pipe comprising a plurality of rotating blades which are oscillated simultaneously by coordinated linkage systems which are controlled by a main drive. The main drive also controls a work feed system comprising a pair of opposed sprockets which cooperate with the corrugated surface of the pipe to move it past the cutters. The overall machine speed is controlled by a dancer roller which actuates a potentiometer system in accordance with the catenary of the pipe between the pipe extruder and the slitting apparatus.

3,768,366

SELECTIVE PRESSURE DIFFERENTIAL REINFORCING MEANS

Frederick G. Grabb; Maxwell L. Cripe, and Delbert J. Gardner, all of South Bend, Ind., assignors to the Bendix Corporation, South Bend, Ind.

Filed Oct. 2, 1972, Ser. No. 294,131
Int. Cl. F01b *31/12*, *25/02*; F15b *13/04*
U.S. Cl. 91—1 12 Claims



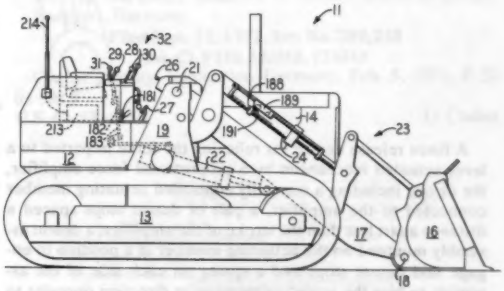
A switching apparatus for selectively diverting the air flow from a pump to a servomotor to create an operational pressure differential across a vacuum suspended wall in response to an operational signal indicating the need for an intensified pressure differential.

3,768,367

REMOTE CONTROL SYSTEM FOR LOAD MANIPULATING VEHICLES

Joe E. Fuzzell, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 822,368, May 7, 1969, Pat. No. 3,606,957.
This application Mar. 11, 1971, Ser. No. 123,371
Int. Cl. F15b *13/16*, *13/044*
U.S. Cl. 91—361 1 Claim



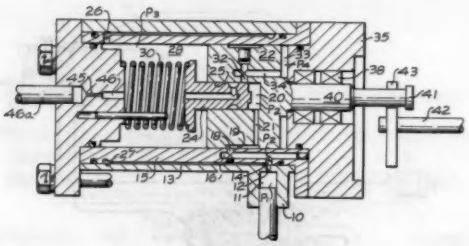
A crawler loader vehicle has remote control means capable of effecting intermediate settings of the operator's control linkages as well as extreme positions and provides for remotely initiating movement of the lift arms and bucket with automatic stopping at the intermediate position if desired. Hydraulic jacks, actuatable through radio controlled solenoid valves, are substituted for existing links in control lever linkages. The jacks perform as a conventional rigid link when the operator is situated on the vehicle and provide for the remote control if the operator's control levers are locked in fixed position.

3,768,368

FUEL VISCOSITY AND DENSITY SENSING FUEL PUMP RACK STOP

Ziedonis I. Krauja, East Peoria, Stanley J. Kranc, Morton, and Thomas V. Wahl, Jr., North Pekin, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 5, 1971, Ser. No. 196,159
Int. Cl. F15b *9/10, 15/17*
U.S. Cl. 91—378 10 Claims



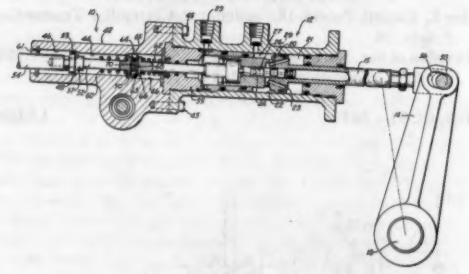
Fuel control means for a multifuel engine for automatically varying the quantity of fuel delivered to said engine to maintain rated power output for various fuels used. The control means include means to adjust the position of a piston in response to a change in fuel density or viscosity. The piston is connected to control the fuel metering.

3,768,369

FORCE RELEASE DEVICE

Dale A. Knutson, Oconomowoc, Wis., assignor to Applied Power Inc., Milwaukee, Wis.

Filed Dec. 1, 1971, Ser. No. 203,612
Int. Cl. F15b *13/16*
U.S. Cl. 91—378 7 Claims



A force release device for relieving the force imparted to a lever actuated mechanism by a proportional force amplifier, the device including a manually controlled actuating member connected to the amplifier, a pair of detent stops spaced a distance apart less than the stroke of the amplifier, a detent assembly mounted on the actuating member in a position to engage said detent stops and a spring on each side of the assembly to bias the actuating member in direction opposite to the direction of manual operation.

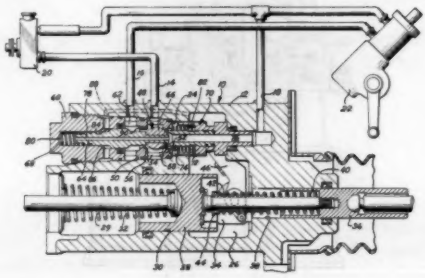
3,768,370

HYDRAULIC BRAKE BOOSTER

Richard L. Lewis, St. Joseph, Mich., assignor to The Bendix Corporation, South Bend, Ind.

Division of Ser. No. 44,285, June 8, 1970, abandoned. This application Mar. 17, 1972, Ser. No. 235,823
Int. Cl. F15b *13/10, 13/04*
U.S. Cl. 91—391 R 3 Claims

A hydraulic brake booster is disclosed which includes an operator-actuated ball valve that cooperates with a pair of spaced, annular valve seating members to control flow of fluid into a chamber to operate a piston that applies the vehicle's brakes. The ball valve is normally urged into sealing engagement with one of the valve seats and cooperates with the other valve seat to define a passage therebetween to permit flow of fluid therethrough. When the vehicle operator applies the vehicle's brakes, the valve is shifted away from the one valve seat, a passage is defined between the valve and the one valve seat permitting flow of fluid into the chamber.

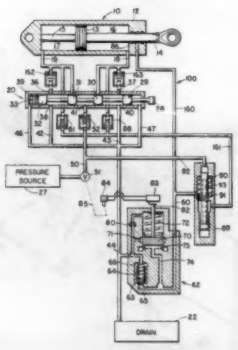


3,768,371

HYDRAULIC SYSTEM FAILURE DETECTORS

Myrl E. Orme, Canoga Park, Calif., assignor to The Bendix Corporation, North Hollywood, Calif.

Continuation-in-part of Ser. No. 889,197, Dec. 30, 1969, abandoned. This application Mar. 24, 1971, Ser. No. 127,450
Int. Cl. F15b *11/16, 13/044*
U.S. Cl. 91—411 R 6 Claims



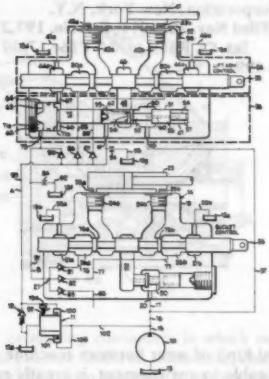
Hydraulic system failure detector including a sensor in a high pressure drain line connected between possible sources of excessive pressure or flow and a drain. The sensor includes a restriction capable of passing limited flows and of relieving limited pressures. It also includes a damped, pressure-operated bypass valve in parallel with the restriction. Relief valves in branches of the high pressure drain line isolate the failure sensor from normal high pressure in those lines until the occurrence of overpressure resulting from a failure thus to permit detection of failures characterized by widely differing fluid pressures while permitting calibration of the detector at the pressure of the lowest failure pressure.

3,768,372

CONTROL ARRANGEMENT FOR HYDRAULIC SYSTEMS

Kenneth G. McMillen, deceased, late of New Castle, Ind. (by Leanne S. McMillen, administratrix), assignor to Borg-Warner Corporation, Chicago, Ill.

Filed July 13, 1972, Ser. No. 271,304
Int. Cl. F15b *11/16*
U.S. Cl. 91—412 20 Claims



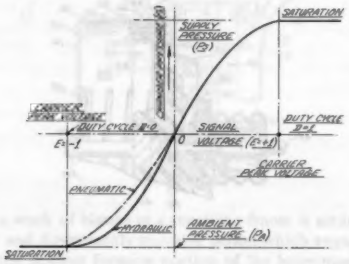
A hydraulic system comprising a plurality of working circuits each including a control valve and a fluid motor, a control signal pressure is selected from a working pressure of one or more working circuits; and this control signal pressure is applied to a valve that is effective to modify the operation of one of the working circuits. The hydraulic system includes a priority valve incorporated into well-known Delta P valves for applications to hydraulically-controlled equipment, such as shovel loaders, the priority function being desirable in this connection to provide pressure or flow priortiy to the bucket cylinders while the bucket is being filled.

3,768,373

LINEARIZED PRESSURE GAIN MODULE

Albert J. Divigard, Waterbury, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed Aug. 28, 1972, Ser. No. 284,236
Int. Cl. F15b *15/17, 13/44*
U.S. Cl. 91—417 6 Claims



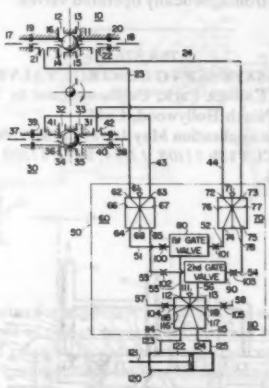
An open loop, time modulated control system has a circuit to shape a carrier wave for improving linearity between the command signal and the output torque of the system.

3,768,374

ANGULAR ACCELERATION SENSOR

Shin Ito, and Fmihiro Ushijima, both of Toyota-shi, Japan, assignors to Toyota-Jidosha Kogyo Kabushiki Kaishu, Toyota-shi, Aichi-ken, Japan

Filed Jan. 28, 1972, Ser. No. 221,518
Claims priority, application Japan, Mar. 2, 1971, 46/10393
Int. Cl. G05d *13/34*
U.S. Cl. 91—419 6 Claims



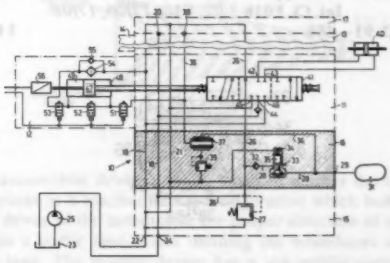
An angular acceleration sensor comprising two inertia bodies located at opposed positions with respect to the axis of rotation of an angular acceleration to be sensed and movable in a direction tangent to the circumference of such rotation; valve mechanisms operated in response to movement of said inertia bodies for deriving fluid pressure signals in accordance with the direction of motion of said inertia bodies, fluid elements for cancelling acceleration components other than the angular acceleration of rotation about said axis of rotation, gate valve means for deriving a signal corresponding to the average of fluid pressure signals input thereto, and an additional fluid element for operating an actuator proportionally with applied fluid pressure signals representative of the angular acceleration of rotation to be sensed.

3,768,375

CONTROL APPARATUS FOR A HYDRAULIC CONSUMER MOTOR

Heinz Flaschar, Asperg, and Klaus Schneider, Ludwigsburg, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Sept. 15, 1972, Ser. No. 289,238
Int. Cl. F15b *13/042, 13/043*
Claims priority, application Germany, Feb. 5, 1971, P 22 05 508.9
U.S. Cl. 91—459 11 Claims



A control apparatus, which controls the operation of a hydraulic consumer motor, has a control valve for either connecting a pump with the consumer motor, or for connecting an idling conduit with the outlet and return conduits of the pump for obtaining idle circulation. A pressure fluid accumu-

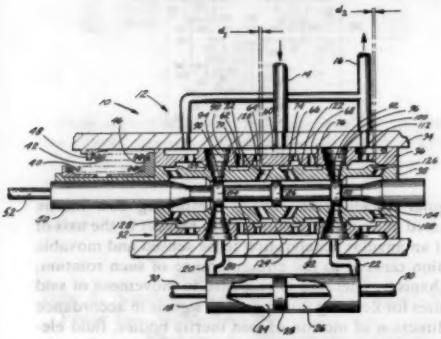
lator is connected by an accumulator conduit with the idling conduit and outlet conduit, and a pressure responsive valve in the accumulator conduit closes the same at a predetermined pressure, or charges the accumulator when its pressure is too low. A supply conduit connects the accumulator conduit with a hydraulic shifting motor by which the control valve is shifted between an idling position, and an operative position controlling the consumer motor. The hydraulic shifting motor is connected by a supply conduit with the accumulator, and operated by electromagnetically operated valves.

3,768,376

FAIL-SAFE SERVO CONTROL VALVE

Myrl E. Orme, Canoga Park, Calif., assignor to The Bendix Corporation, North Hollywood, Calif.

abandoned. This application May 16, 1972, Ser. No. 253,749
Int. Cl. F15b *11/08, 13/04;* F16k *11/00*
U.S. Cl. 91—466 3 Claims



A fail-safe servo control valve having an improved valve labyrinth, which is developed by suitably grooved and ported and selectively movable valve components, that eliminates system fluid "short circuit" paths through the labyrinth so that effective output control is maintained in the event that a valve component becomes stuck or jammed.

3,768,377

HYDROSTATIC BUTTON BEARINGS FOR PUMPS AND MOTORS

William K. Engel, Peoria, Peter H. Van Gaasbeek, Peoria, William B. Norick, Joliet, and James L. St. Germain, Plainfield, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 791,955, Jan. 17, 1969, Pat. No. 3,635,126. This application Jan. 14, 1972, Ser. No. 217,984
Int. Cl. F01b *3/02;* F16c *17/06, 17/08*
U.S. Cl. 91—486 1 Claim

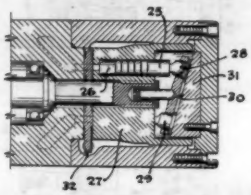
In axial-piston, hydraulic pumps and motors, the thrust loadings of the pistons on their bearing supports vary proportionally to pressures in the unit and also circumferentially around the bearing supports. By employing hydrostatic button bearings pressurized in "sets" around the bearing support with at least one set pressurized with the unit's inlet pressure and another "set" pressurized by the unit's outlet pressure, improved bearing performance is achieved. Also, certain surface configuration forming the sills and recesses of the individual buttons can enhance bearing performance.

3,768,378

MACHINES

Cecil E. Adams, Columbus, Ohio; Joseph J. Connelly, Oakland, N.J., and Joseph F. Krehlik, Columbus, Ohio, assignor to Abex Corporation, New York, N.Y.

Filed Nov. 10, 1971, Ser. No. 197,278
Int. Cl. F01b *13/04;* F16c *17/00*
U.S. Cl. 91—499 21 Claims



An unusual kind of wear between machine parts in sliding contact, traceable to environment, is greatly reduced by constituting at least one of the parts of a preferred steel alloy casting consisting essentially of

Carbon	0.9–1.1
Chromium	4.0–6.5
Molybdenum	2.5–7.5
Vanadium	1.0–1.75
Tungsten	2.8–3.5
balance Iron	

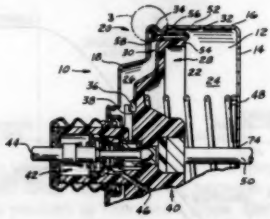
In a specific embodiment, the part is the cam ring of a vane pump obtained by casting the alloy as a centrifugal tube and cutting ring blanks from the end of the tube.

3,768,379

SERVOMOTOR VACUUM SEAL

Delbert J. Gardner, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Aug. 14, 1972, Ser. No. 280,696
Int. Cl. F01b *19/00;* F16j *3/00*
U.S. Cl. 92—99 7 Claims

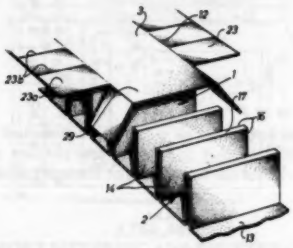


A servomotor having a front shell with an annular external surface which can vary from an ellipse to a circle joined to a concentric rear shell by a flange. The flange contacts the end plate of the rear shell and biases a peripheral bead of a diaphragm against a seat to seal the interior of the front and rear shells from the atmosphere.

3,768,380
PRODUCTION OF CONTAINERS

Sven Olof Soren Stark, Rydsgard, Sweden, assignor to Tetra Pak Developpement SA, Lausanne, Switzerland

Filed Aug. 4, 1972, Ser. No. 278,056
Claims priority, application Germany, Aug. 20, 1971, P 21 41 892.8
Int. Cl. B31b *17/26, 17/60*
U.S. Cl. 93—36 R 8 Claims

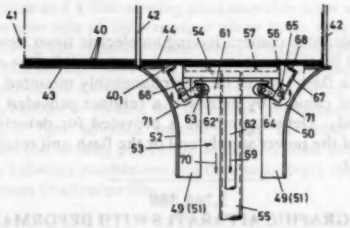


A method of producing containers in which one strip element is folded to provide uniform, transverse, channel-shaped portions and a second strip member is placed over the channel-shaped portions, the lateral, longitudinal side edges of the member being folded down against the edges of the channel-shaped portions and sealed thereto to form a container. The side edges of the member being cut to provide transverse slits therein to form flaps of a size to cover the open ends of each channel-shaped portion to thus facilitate manufacture of the containers.

3,768,381
DEVICE FOR THE ERECTION OF BLANKS FOR MAKING PLUG-IN-FOLDING BOXES

Georg Kopp, Neuhausen am Rheinfall, Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rhinefall, Switzerland

Filed Jan. 3, 1972, Ser. No. 215,015
Claims priority, application Switzerland, Jan. 6, 1971, 136/71
Int. Cl. B31b *1/50, 1/78*
U.S. Cl. 93—53 LF 5 Claims

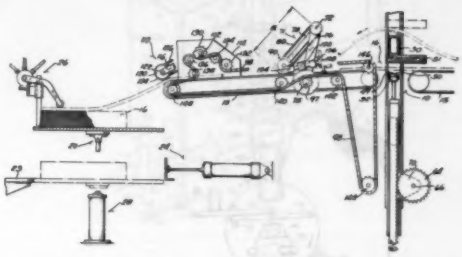


Below a stack of blanks in a receiving frame is arranged an upwardly and downwardly movable piston which engages and sucks in the bottom forming portion of the lowermost blank and moves it downwardly past stationary guide members which fold the side wall forming portions and cover upwardly. A control piston actuates pivotally mounted grippers which enter into corner slots at the bottom forming portion of the blank and clamp the bottom of the box against the suction piston during its downward movement.

3,768,382
STACKER

Peter Zernov, Wauwatosa, and Norman C. Abler, Menomonee Falls, both of Wis., assignors to Zerand Corporation, New Berlin, Wis.

Filed Feb. 4, 1971, Ser. No. 112,558
Int. Cl. B31b *1/98*; B65h *29/68, 33/06*
U.S. Cl. 93—93 DP 30 Claims

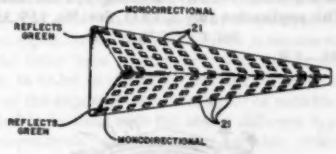


An apparatus for automatically providing a gap or space in the movement of one or more files of carton blanks conveyed in a shingled relation on a delivery conveyor to an infeed conveyor or a carton blank stacker or similar carton handling device, the apparatus including a first member positioned in a transverse relation to the direction of travel of the file of carton blanks to engage the files and momentarily stop or hold the blanks while the speed of the infeed conveyor is increased to provide a gap in the file. The gap in the file of shingled carton blanks should be of sufficient length to allow for removal of the carton blanks stacked in the stacker. The first member can take the form of a clamp or brake shoe, a catch plate, or a gripper wheel. Continuously driven drive wheels can be provided to remove any loose, skewed or canted blanks gripped between the first and second members and to feed the carton blanks into the stacker.

3,768,383
DIRECTIONAL MARKER DEVICE FOR AUTOMOBILE ROADBEDS

Hartwell F. Tucker, Mountain View, Calif., assignor to Tucker Associates, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 864,955, Oct. 3, 1969, abandoned, which is a continuation of Ser. No. 696,448, Jan. 8, 1968, abandoned. This application Nov. 3, 1970, Ser. No. 86,485
Int. Cl. E01f *9/00*
U.S. Cl. 116—63 R 18 Claims



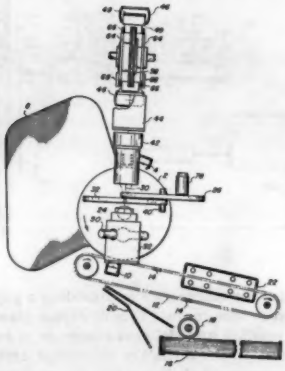
An automobile driving lane or roadbed marker device for attachment to a roadbed has a configuration which indicates to the driver of the automobile the proper direction of movement in a traffic lane, while defining the boundaries of the traffic lane. The marker device has a low-profile elongated three-dimensional body the bottom surface of which is flat and which tapers in width from about 4 to 8 inches at one end to one to 2 inches at the other end. The top surface of the body is divided into facets or angularly disposed surfaces which tehmselves reflect light, or on which separate reflective units are formed or attached.

3,768,384

PROJECTION ASSEMBLY

Lawrence J. Mason, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 29, 1972, Ser. No. 293,601
Int. Cl. B41b 17/10
U.S. Cl. 95—4.5 4 Claims



A recording system wherein a character disc or the like having transparent light modulating patterns thereon is rotated through an exposure zone so that selected patterns may be projected by the energization of a flash lamp. The projected pattern is collimated and directed to a recording zone through which move lens-mirror units at a constant speed that intercept the projected pattern and focus it onto a photoreceptive recording medium. The patterns are arranged on the character disc in spiralled configurations such that as the disc is rotated the first and last patterns of a spiral move through a fixed exposure zone at different positions relative thereto. A plurality of concentric pattern sets along with a corresponding plurality of flash lamps allows for the simultaneous projection of a plurality of lines.

3,768,385

APPARATUS FOR PRODUCING A MASTER DOT PATTERN FOR PHOTO-ETCHING OF A GRADED HOLE SHADOW MASK

Kinichi Noguchi, Tokyo, Japan, assignor to Toppan Printing Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 883,668, Dec. 22, 1969, which is a continuation of Ser. No. 387,724, Aug. 5, 1964, abandoned. This application July 2, 1971, Ser. No. 159,335
Int. Cl. G03b 27/16
U.S. Cl. 95—1 R 9 Claims

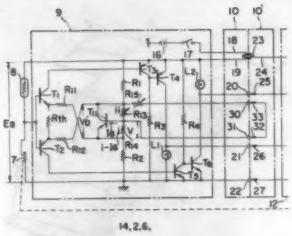
Apparatus for the production of master dot patterns for photo-etching a graded-hole shadow mask for use in a color picture tube comprising mounting a grading mask having its transparency concentrically, progressively decreasing from the center toward the periphery thereof between a light source and a photographic material and inserting a screen between the grading mask and the light source.

3,768,386

EXPOSURE DETERMINING DEVICE

Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 21, 1972, Ser. No. 308,570
Claims priority, application Japan, Nov. 29, 1971, 46/112069
Int. Cl. G01j 1/44
U.S. Cl. 95—10 CE 3 Claims



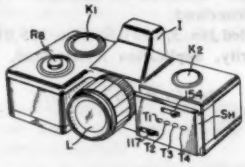
In an exposure determining device of the type in which a complementary symmetrical circuit including two npn and pnp transistors detects the balance of a bridge circuit including a photoelectric element thereby to indicate information of proper or improper exposure, any variation in the sensitivity resulting from the change-over of the source voltage for the exposure meter may be corrected to maintain the sensitivity at a predetermined level irrespective of the source voltage variation.

3,768,387

PHOTOGRAPHIC CAMERA HAVING AN ELECTRIC TIMER DEVICE

Goro Hasegawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1972, Ser. No. 294,520
Claims priority, application Japan, Oct. 20, 1971, 46/83113
Int. Cl. G03b 9/08, 19/04
U.S. Cl. 95—11 R 7 Claims



A photographic camera having an electric timer device incorporated therein permits a power supply unit for the electric timer and a flash unit to be interchangeably mounted on the body of the camera by means of a retainer provided on the camera body. Detector means is provided for detecting the presence of the power supply unit or the flash unit retained by the retainer.

3,768,388

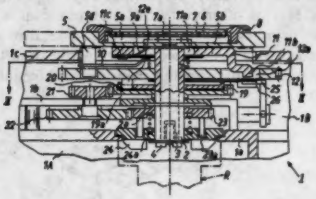
PHOTOGRAPHIC APPARATUS WITH DEFORMABLE RELEASE MEANS

Hubert Hackenberg; Johann Putscher, and Rainer Spinnler, all of Munchen, Germany, assignors to Agfa Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 26, 1971, Ser. No. 175,096
Claims priority, application Germany, Sept. 10, 1970, P 20 44 740.9
Int. Cl. G03b 19/12
U.S. Cl. 95—31 R 17 Claims

A still camera wherein the film transporting mechanism has a rapid transport lever and the release mechanism has a deformable membrane mounted in a recess at the outer side of

the lever. The deformation of the membrane results in actuation of the shutter in a single angular position of the lever. The



membrane transmits motion to a shutter actuating member of the release mechanism by way of two plate-like members which rotate in response to pivoting of the lever.

3,768,389

TRANSPORT METERING AND SHUTTER COCKING MECHANISM FOR CAMERAS

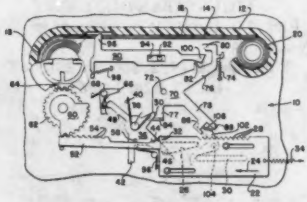
Helmut Ettischer; Wolfgang Ort; Horst Simon, and Kurt Steisslinger, all of Stuttgart Wangen, Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 30, 1972, Ser. No. 258,076

Claims priority, application Germany, Aug. 24, 1971, P 21 42 277.5

Int. Cl. G03b 9/68, 19/04

U.S. Cl. 95—31 AC **4 Claims**



A camera for perforated roll film includes a transport mechanism for advancing film along an exposure plane, a metering mechanism for selectively disabling the transport mechanism and a film sensing pawl movable from a retracted state on one side of the exposure plane to an extended state transversing the exposure plane when intercepting one of the film perforations. Movement of the film along the exposure plane moves the sensing pawl to a position allowing the metering mechanism to disable the transport mechanism. After exposure, a film advance member may be moved to first withdraw the sensing pawl from the perforation and cock the camera's shutter mechanism and then to activate the transport mechanism to advance film.

3,768,390

PHOTOGRAPHIC CAMERA WITH ELECTRIC SHUTTER

Toshio Kobori, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

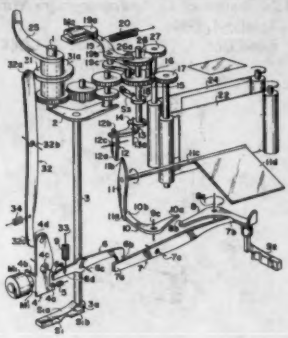
Filed July 19, 1971, Ser. No. 163,602

Claims priority, application Japan, July 25, 1970, 45/65335

Int. Cl. G03b 9/62

U.S. Cl. 95—53 EA **4 Claims**

A photographic camera with an electric shutter, which first closes a shutter so as to detect whether the voltage of a power source battery used for an electric shutter is suitable or not to operate said electric shutter by pushing down a shutter release button and then renders said electric shutter operative or inoperative depending upon the suitability of the voltage of said power source through an electromagnetic and mechanical means.



3,768,391

ELECTRIC CAMERA SHUTTER WITH LIGHT RESPONSIVE CONTROLS

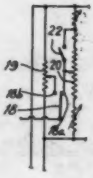
Seinan Miyakawa, and Nobuhiro Noda, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed May 9, 1972, Ser. No. 251,761

Claims priority, application Japan, May 12, 1971, 46/37319; May 13, 1971, 46/37735; May 21, 1971, 46/41155

Int. Cl. G03b 7/08

U.S. Cl. 95—64 B **5 Claims**



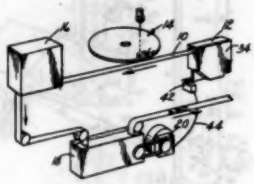
A camera capable of automatically determining the extent to which the film is exposed either when using automatic objectives which are stopped down to a preselected aperture automatically just prior to exposure or objectives which are manually stopped down, with light which is measured passing through the latter type of objective with its stopped down diaphragm. In order to introduce into the circuitry the factor of the size of the exposure aperture, a pair of variable resistors are provided to be used with the above different types of objectives, respectively, and when the variable resistor to be used with the non-automatic objective operates, a bypass switch, which bypasses the other variable resistor, is closed, so as to provide a proper signal according to the type of objective which is used. In addition, when making an exposure of extremely short duration, controls are provided to deenergize an electromagnet which releases a trailing curtain in an extremely short time which does not require the interval usually required for the response of the circuitry to the various exposure-determining factors. Also, the camera includes an indicator which is available for indicating the exposure time to the operator in such a way that this indication does not in any way interfere with the functioning of the circuitry which automatically determines the exposure.

3,768,392

FILM MAGAZINE DISPENSING UNIT AND CONTROL SYSTEM

Anthony Gardella, Westfield, and David Kolton, East Hanover, both of N.J., assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Dec. 1, 1972, Ser. No. 311,086
Int. Cl. G03d *3/00*
U.S. Cl. 95—89 R **2 Claims**



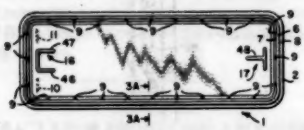
A strip supply magazine, known also as a cassette, having two or more exit openings, in order to provide visual indication of the type of material within the cassette. The preferred embodiment also provides an exposing and/or developing system, including interacting devices on the cassette and the holder for the cassette to control the rate of processing. The rate differs according to the position of the cassette in a holder by causing the interaction or not.

3,768,393

PHOTOGLASS SHIPPING APPARATUS

Carl R. Betz, Los Altos, and Ivan H. McCracken, Cupertino both of Calif., assignors to Microfab Systems Corporation, Palo Alto, Calif.

Filed Nov. 25, 1970, Ser. No. 92,853
Int. Cl. G03d *3/00*
U.S. Cl. 95—100 **2 Claims**



A coordinated slotted photoglass or mask processing and printing carrier and light tight shipping container is described. The carrier is provided with means for holding photosensitive glass plates safely and reliably in substantial parallelism to enhance ultrasonic cleaning and to permit processing with a minimum of handling of the plates. The carrier is further adapted to cooperate with automated processing and printing equipment and is provided with means to insure proper orientation of the carrier within and without the container under low light conditions.

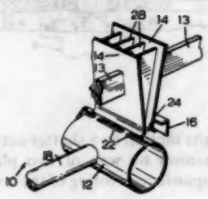
3,768,394

DEVICE FOR PRODUCING DYNAMIC FLOW IN FLUIDS TO FORM CURTAINS OF THE FLUID

John W. Powlesland, Woodbridge, Ontario, Canada, assignor to Powlesland Engineering Limited, Woodbridge, Ontario, Canada

Filed June 18, 1971, Ser. No. 154,526
Int. Cl. F24f *9/00*
U.S. Cl. 98—36 **14 Claims**

A fluid curtain generator according to the present invention comprising a generator for generating a high velocity stream of primary air and means for receiving the high velocity stream of air so as to mix the primary air with secondary air. The device also controls the rate of expansion of the thickness of the air curtain generated by mixing the primary and secondary air. The generator for generating the high velocity stream of primary air is preferably in the form of a conduit which is formed with a plurality of passageways opening outwardly therefrom. Mixing of primary and secondary air is achieved by passing the primary air through a venturi section and allowing it to expand in an expansion chamber while simultaneously inducing secondary air into the primary air stream. Preferably the primary air is directed between the venturi section formed at the inner end of a pair of guide plates arranged in a spaced relationship one on either side of the jet of primary air. The venturi section is spaced outwardly from the discharge of the primary air generator a distance sufficient to permit secondary air to be drawn in from the atmosphere on either side of the primary air stream. A closure plate may also be provided so that the atmosphere on one or other side of the venturi may be closed off to prevent secondary air being drawn into the venturi section from that side.

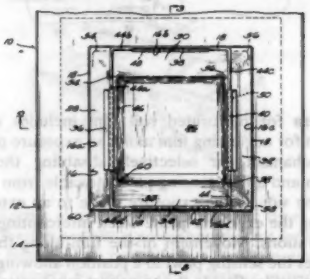


3,768,395

ADJUSTABLE DIFFUSER

Norman A. Rick, Mt. Horeb, Wis., assignor to Wehr Corporation, Milwaukee, Wis.

Filed May 3, 1972, Ser. No. 250,047
Int. Cl. F24f *13/06*
U.S. Cl. 98—40 B **7 Claims**



A diffuser frame is provided with a rectangular opening and a rectangular deflector overlies the opening. The deflector is imperforate and is supported from the frame by a number of brackets and a rectangular rod member slidable in the brackets. Two brackets are connected to the frame and two additional brackets are connected to the deflector with the rod member being movable with as well as in the deflector brackets. The deflector is movable with the rod member relative to the frame along one path parallel to one pair of opposed sides of the opening, and is also movable on the rod member along another path parallel to the other pair of opposed sides of the opening but perpendicular to the first path. The deflector thus is movable from a centered position selectively into each of the four corners of the opening or to any position intermediate the centered and corner positions. The

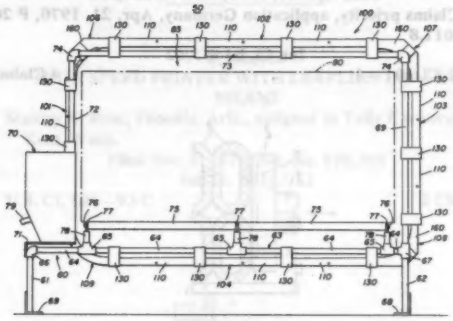
deflector is generally dished with a convex side directed toward the frame opening and the concave side directed outwardly.

3,768,396

STRAP TRACK FOR STRAPPING MACHINE

Bestor P. Coleman, Willow Springs, Ill., assignor to Interlake, Inc., Chicago, Ill.

Filed Aug. 17, 1970, Ser. No. 64,434
Int. Cl. B65b *13/04*
U.S. Cl. 100—26 **25 Claims**



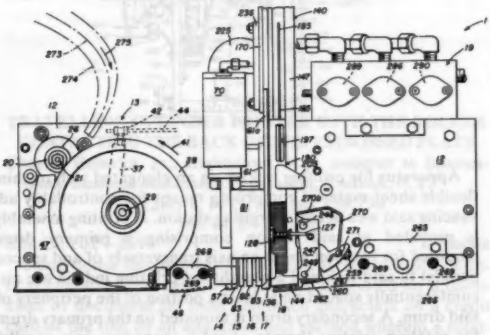
A strap guide track defines a generally rectangular path from a strapping head about an object strapping location and back to the head and comprises a plurality of straight sections and four arcuate corner sections, each straight section and one corner section including a backing plate and each of the other corner sections including an assembly of interleaved rollers with the plates and rollers all coooperating to define a backing wall, each straight section and the other three corner sections including a pair of jaw-like strap retainers pivotally mounted on opposite sides of the backing wall and movable between retaining and releasing positions, each pair of retainers being urged toward the retaining position by a tensioned spring coupled therebetween at points variably spaced from the pivot axis for varying the bias force; the track has a wide entry portion to accommodate ready strap passage and a tapered exit portion to accurately position the strap in the head.

3,768,397

STRAPPING MACHINE

Robert F. Plattner, Spring Lake, Mich., assignor to Interlake, Inc., Chicago, Ill.

Filed Feb. 17, 1972, Ser. No. 227,052
Int. Cl. B65b *13/24*
U.S. Cl. 100—30 **13 Claims**



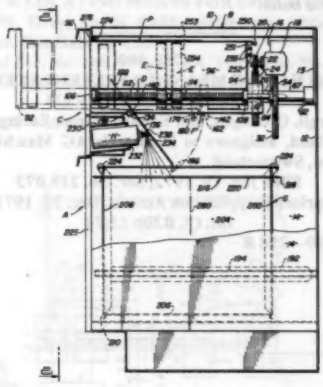
A strapping machine for applying a strap around an object wherein means are provided for holding the leading end of the strap encircled about the object and overlapping a supply portion of the strap and for feeding a seal having an opening therein and for applying the seal around the overlapped portion of the strap to form a seal joint therebetween, a seal magazine for holding a stack of nested seals with the openings therein aligned to be fed individually to the seal joint forming means, a seal positioning mechanism extending from the charging end of the magazine to near the discharging end thereof and passing through the aligned openings at the stack of the nested seals housed in the magazine, and a hold-down mechanism for maintaining a constant pressure on the seals housed within the seal magazine independent of the number of seals in the stack of nested seals.

3,768,398

COMPACTING APPARATUS

Myron E. Ullman, Jr., Canfield, Ohio

Filed Mar. 7, 1972, Ser. No. 232,447
Int. Cl. B30b *15/30, 1/18*
U.S. Cl. 100—45 **33 Claims**



Compacting apparatus includes a slidable drawer defining a compacting chamber for compacting materials placed therein. Compacting means is movably mounted in the drawer for compacting materials placed therein. The drawer is movable between a loading position and a compacting position. Power means is provided for moving the compacting means. Separable coupling means is provided between the power means and compacting means. The separable coupling is engaged when the drawer is in its compacting position and disengaged when the drawer is in its loading position.

3,768,399

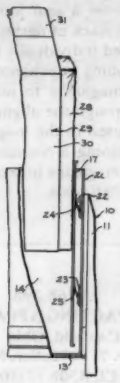
COMPACTING APPARATUS HAVING MEANS FOR RELEASING A COMPACTED LOAD THEREFROM

Leonard J. Martiniak, Waukesha, Wis., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 24, 1972, Ser. No. 237,825
Int. Cl. B30b *15/32*
U.S. Cl. 100—229 A **10 Claims**

Improved means for breaking adhesion and facilitating release of a compacted load of material from a walled receptacle in a pressing apparatus includes a movable portion of the receptacle side wall adapted to move in a slide-like action a predetermined distance outwardly with the compacted load being removed. The movable wall portion may also be adapted to move a limited distance laterally as it moves up-

wardly. A lifting band encircling the load within the receptacle may be employed to withdraw the compacted load from the



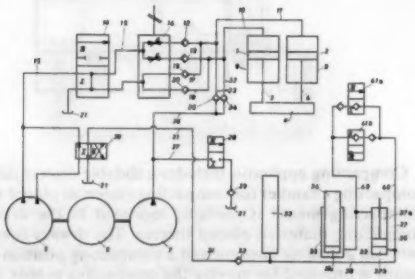
receptacle whereby the movable wall portion is caused to lift up and away from the load in response to a lifting force exerted on the band.

3,768,400

PRESS HAVING MEANS TO PREVENT SKEWING MOVEMENT OF THE RAM

Walter Gygli, Oftringen, and Eduard Hanni, Zofingen, both of Switzerland, assignors to Hammerle AG Maschinenfabrik, Zofingen, Switzerland

Filed Jan. 19, 1972, Ser. No. 219,073
Claims priority, application Austria, Dec. 22, 1971, 516
Int. Cl. B30b *15/24*
U.S. Cl. 100—258 R **3 Claims**



A press wherein there is provided an arrangement of opposing cylinder-piston motors to prevent skewing of the press ram or plasten when it is moved in its work stroke by cylinder-piston work motors. The opposing motors comprise a single acting motor and a double acting motor, each connected to an end of the ram in opposing relation to the work motors. The single acting cylinder is serially connected to the rod end of the double acting motor. The opposing motors are connected to a pressure accumulator which provides the opposing counter-pressure to overcome skewing movements of the ram and also provides pressure fluid to the opposing motors to retract the ram.

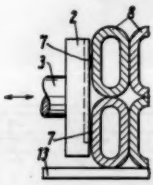
In another embodiment, the ram is provided with an extension which is perpendicular thereto. Pressurized cylinder-piston motors are arranged on opposing sides of the extension to maintain it in a position wherein the ram is parallel to the base bed of the press. Valve means are provided to control the rate of fluid flow to the work motors connected to the ram. The valve means are actuated by means located near the extension whereby skewing of the ram moves the extension to actuate the valves to control the rate of flow to the work motors in the sense to eliminate the skewing movement and to resolve the ram to its parallel position.

3,768,401

IDENTIFICATION MARKING MEANS FOR BLANKS FOR ROPE PRESSURE CLAMPS

Otto Sahm, Behringstrasse 8, Bremerhaven, and Dierk Fischer, Mecklenburger Weg 65, Bremrhaven-Leherheide,, Germany

Filed Apr. 16, 1971, Ser. No. 134,556
Claims priority, application Germany, Apr. 21, 1970, P 20 19 011.8
Int. Cl. B44b *5/02*
U.S. Cl. 101—4 **4 Claims**



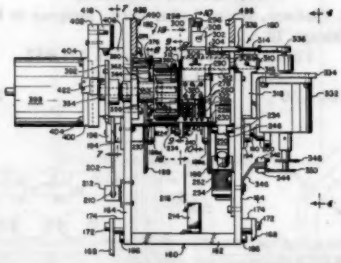
Rope pressure clamps are manufactured in automatic machinery by sawing or otherwise cutting off lengths of ductile aluminum alloy pipes of oval cross-section. Insertable dies are provided in the clamping members which hold the pipes at a cutoff station, whereby identification information as to the size of the rope clamp is permanently embossed in the rope clamp during the formation thereof.

3,768,402

TICKET PRINTER

Charles R. Levesque, Cuyahoga Falls; Donald A. Schmieley, Brookpart; Francis G. Hunstiger, Parma Heights, and Arlie L. Brown, Parma, all of Ohio, assignors to Design and Development, Incorporated, Cleveland, Ohio

Filed Dec. 30, 1971, Ser. No. 213,879
Int. Cl. B41l *47/46*
U.S. Cl. 101—92 **9 Claims**



Apparatus for printing tickets on an elongated web or thin, flexible sheet material comprising means for controllably advancing said web across a printing station. A printing assembly is provided at said station comprising a primary drum mounted for rotation about an axis transversely of and spaced parallel to said web and a plurality of printing indicia are circumferentially spaced on at least a portion of the periphery of said drum. A secondary drum is mounted on the primary drum for rotation relative thereto about a secondary axis parallel and radially outwardly of the first mentioned axis, and a plurality of printing indicia are circumferentially spaced around at least a portion of the periphery of the secondary drum. In-

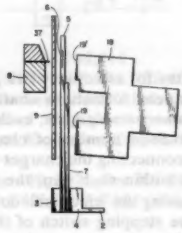
dexing means is provided for rotating the secondary drum relative to the primary drum to position a selected indicia on the former adjacent a selected indicia on the periphery of the latter. Primary indexing means is provided for rotating said printing drum to place any selected indicia on the drum into the printing position, and print hammer means, swingable about an axis parallel to the primary axis from a rest position to a printing position, is provided for urging the web into momentary printing contact against selected indicia on either drum.

3,768,403

HIGH SPEED PRINTER WITH LEAFLIKE IMPACT MEANS

Stanley E. Rose, Phoenix, Ariz., assignor to Tally Corporation, Kent, Wash.

Filed Nov. 8, 1971, Ser. No. 196,466
Int. Cl. B41j *5/12*
U.S. Cl. 101—93 C **2 Claims**



A printing hammer with a lesser length damper in juxtapositional relationship, which damper provides vibration damping of the printing hammer. High speed line printers utilizing impact printing means are often limited to a maximum speed due to the spring response and continued vibration of the printing hammers. The printing hammer taught by the instant invention incorporates a lesser length damper in juxtapositional relationship to provide vibration damping by having the damper vibrate at a natural frequency different from that of the printing hammer. During the actuation of the printing hammer, the mass of both the printing hammer and the damper strike the print surface. Subsequently, the printing hammer and the damper will vibrate in opposition to one another to rapidly effect a damping action. A damper length which is approximately 0.707 times the length of the printing hammer provides the damper with a natural frequency twice that of the printing hammer. Other means for providing differing vibration frequencies are anticipated.

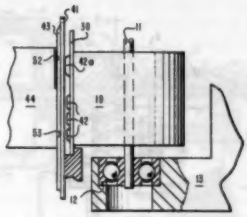
3,768,404

TRAVELLING CYLINDER PRINTER WITH THE ROLLER CONTACTING THE BACK OF THE EMBOSSED PLATE

Charles Holovka, Jr., Hightstown, N.J., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 1, 1971, Ser. No. 158,750
Int. Cl. B41f *3/20*
U.S. Cl. 101—269 **6 Claims**

Sharp dense images meeting the critical requirements of optical character recognition devices are imprinted on a document or document set from embossed characters on a credit card or the like by an apparatus and method wherein a rotating pressure roll applies pressure along a rolling line of contact to and through the smooth side of the credit card to cause the embossments to contact and exert compressive pressure on the document or set and effect image transfer from an imaging medium (such as carbon paper, inked ribbon or a pressure-



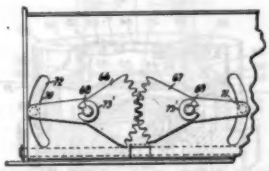
sensitive carbonless coating) that is interposed between the document and a fixed flat platen against which the document or set is pressed.

3,768,405

CHECK LOCATING MEANS FOR CHECKWRITERS

Michael W. Grey, Azusa, Calif., assignor to Addmaster Corporation, San Gabriel, Calif.

Division of Ser. No. 168,979, Aug. 4, 1971, Pat. No. 3,677,463.
This application Mar. 27, 1972, Ser. No. 238,686
Int. Cl. B41f *1/28*
U.S. Cl. 101—407 **2 Claims**



A checkwriter having differentially settable printing sectors for printing amounts on checks. The sectors are manually advanced to different amount representing positions from home positions wherein they locate special symbols to be printed in lieu of amounts. Upon operation of the machine, a printing member is actuated to impress a check against type characters carried by the sectors and located on a printing line. Intermeshing adjustable check locating members are carried by the printing member to properly position a check relative to the printing line.

3,768,406

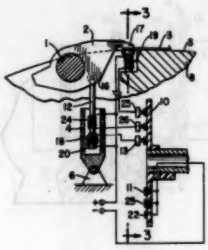
SHEET GRIPPER

Rolf Gutsche, Dresden; Manfred Hanske, and Gunter Lungwitz, both of Radebeul, all of Germany, assignors to VEB Polygraph Leipzig Druckmaschinenwerk Planeta Radebeul, Radebeul, Germany

Continuation-in-part of Ser. No. 72,714, Sept. 16, 1970. This application July 3, 1972, Ser. No. 268,417
Int. Cl. B41f *21/04*
U.S. Cl. 101—409 **8 Claims**

Apparatus for gripping a sheet on a support surface. Gripper fingers are moved by first electromagnets, for

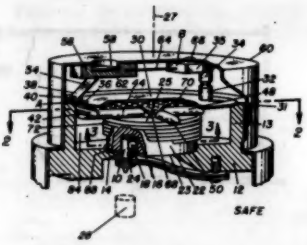
gripping the sheet between the fingers and said surface. The fingers are then held against the sheet by second electromagnets which are arranged in the support surface and cause the fingers to hold the sheet against said surface with an added holding force.



3,768,407
ANTI-DISTURBANCE DELAY FUZE

Antonio Savarese, Jr., Morris Plains, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 14, 1972, Ser. No. 263,719
Int. Cl. F42b *23/26*
U.S. Cl. 102—8 **6 Claims**



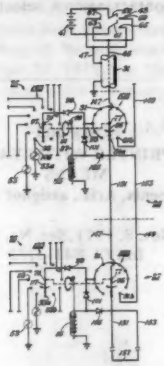
The invention relates to an anti-disturbance delay fuze for safing, arming and initiating a munition. The present invention permits a munition to be safely handled when launched, to remain inoperative during a first interval of time equivalent to the period that this munition is being dispersed to the target area, to be responsive immediately to subsequent disturbance, and to cause initiation after a second interval of time after dispersal when there has been no disturbance.

The present invention comprises a housing having a central bore, a delay disc counter bore in an open end and an axial counter bore in a partially closed end, a biased triggering means rotatably positioned in the axial counter bore for arming the munition after a first period of time and firing the munition after a second period of time, a firing pin means operatively affixed to the housing and releasably held in the triggering means, a fuze cover circumambient to the housing having an integrally formed disturbance weight position lock and pivot depending for the inside surface of the cover, and a delay means operatively positioned intermediate to the disturbance means and the triggering means for keeping the disturbance means inoperative during the first time period and initiating the munition upon movement after the first time period, and for initiation of the munition after a second time period where there has been no movement of the munition during the interval of time between the first and second periods.

3,768,408
SELECTIVE FIRING APPARATUS

Bobby J. Hallmark, Fort Worth, Tex., assignor to Gearhart-Owen Industries, Inc., Fort Worth, Tex.

Filed Sept. 30, 1971, Ser. No. 185,035
Int. Cl. E21b *43/116*
U.S. Cl. 102—21.6 **7 Claims**

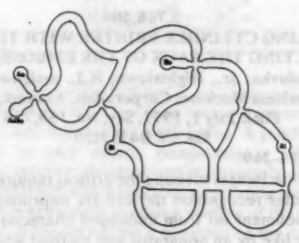


Improved apparatus for selectively firing charges in a well penetrating subterranean formations characterized by a plurality of discrete and separable guns; each carrying, in addition to its predetermined number of charges, a multi-deck stepping switch for connecting the charges with the firing conductor in sequence within each gun, the stepping switch of each lower gun having an electrical connection with the stepping relay of the stepping switch of the next higher gun such that the next higher gun is stepped from an isolating contact onto its first charge after, and only after, all of the charges in the lower gun have been fired. Appropriate unidirectional conduction means are provided to pass current of a first polarity for firing the charges; pass current of a second polarity for stepping onto the next charge; and to isolate electrically, lower guns such that they will not cause a malfunction even if their conductors should become grounded. An electrical interconnection is provided on the bottom gun such that its stepping switch may be stepped from its isolating contact by current of the second polarity. Specific structural and preferred embodiments are also disclosed.

3,768,409
BINARY EXPLOSIVE LOGIC NETWORK

Fredric L. Menz, Ridgecrest, and Stephen L. Redmond, China Lake, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 10, 1972, Ser. No. 305,642
Int. Cl. F42b *3/10*
U.S. Cl. 102—22 **2 Claims**



An explosive logic network with two inputs wherein initiation of either the first input, the second input or the first and

second inputs simultaneously results in a first output, a second output or a third output, respectively.

3,768,410

CAP SENSITIVE AMMONIUM NITRATE-HYDRAZING-WATER-EXPLOSIVE

Michel E. Maes, Bellevue, and Albert F. Abbott, Seattle, both of Wash., assignors to Explosives Corporation of America, Issaquah, Wash.

Filed Oct. 14, 1971, Ser. No. 189,340
Int. Cl. C06b *1/04, 13/00*
U.S. Cl. 102—24 R **19 Claims**

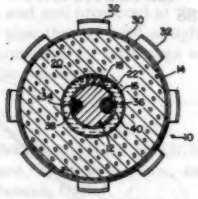
An explosive adapted for field mix and comprising about ten parts by weight of a first ingredient in solid form which in ammonium nitrate or mixtures of ammonium nitrate with a minor or equal amount of other oxidizer salt such as ammonium perchlorate or the like and about 1 part by weight of a second ingredient in liquid form which comprises about equal parts of hydrazine and water by weight.

3,768,411

SAFETY BLASTING APPARATUS AND METHOD

Michel E. Maes, Bellevue; James E. Friant, Renton; Albert F. Abbott, Seattle, all of Wash., and James R. Steffey, Paris, France, assignors to Explosives Corporation of America, Issaquah, Wash.

Filed Nov. 29, 1971, Ser. No. 202,876
Int. Cl. F42b *3/00;* **F42d** *1/06, 3/04*
U.S. Cl. 102—24 R **10 Claims**



A two component explosive mix package having two component containing chambers separated by a rupturable wall. A detonating cord is arranged in sufficient proximity to the rupturable wall so that detonation of the cord ruptures the wall to cause mixing of the two components to make an explosive mixture. Thereafter activation of other detonating means causes the mixture to explode.

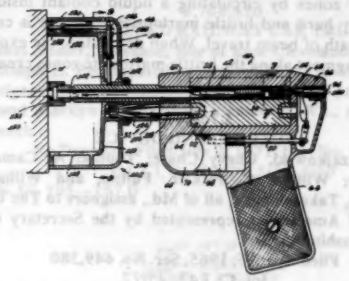
3,768,412

FASTENER AMMUNITION FOR REPEATING PROPELLANT GAS POWERED DRIVING TOOL

David Dardick, Palos Verdes Peninsula, Calif., assignor to IRW Inc., Redondo Beach, Calif.

Division of Ser. No. 665,133, Sept. 1, 1967, Pat. No. 3,514,026. This application Mar. 16, 1970, Ser. No. 19,666
Int. Cl. F16b *15/04;* **F42b** *5/02*
U.S. Cl. 102—38 **1 Claim**

Fastener ammunition for a propellant gas powered fastener driving tool having a barrel and a breech mechanism at the breech end of the barrel for initially transporting an ammunition round from an ammunition magazine to firing position, selectively firing the round in firing position to drive a fastener



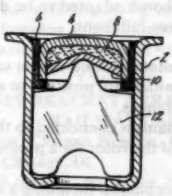
into a workpiece, and finally ejecting the spent cartridge case of the fired round, or the entire round in the event that the round is not fired.

3,768,413

ELECTRIC AND IMPACT PRIMER

Marcus Ramsay, New Haven, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Mar. 10, 1972, Ser. No. 233,656
Int. Cl. F42b *5/08*
U.S. Cl. 102—46 **4 Claims**



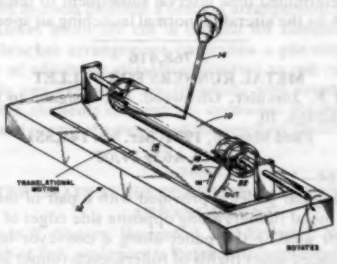
A primer assembly which can be ignited by either impact or electrical means.

3,768,414

CONTROLLED FRAGMENT WARHEAD

Raymond J. Polcha, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 21, 1971, Ser. No. 145,977
Int. Cl. F42b *13/48*
U.S. Cl. 102—67 **1 Claim**



A method of producing fragmenting warheads that permits selecting sizes and numbers of fragments desired while allowing for assembly line production. The sizes and shapes of

desired fragments are traced onto the outside of an explosive case by an electron beam welder. The electron beam creates a thin molten zone along its path of travel. Upon fast cooling of the molten zones by circulating a liquid coolant inside the case, a very hard and brittle martensite structure is created along the path of beam travel. When detonated, the explosive case will fragment along the brittle martensite zones created.

3,768,415

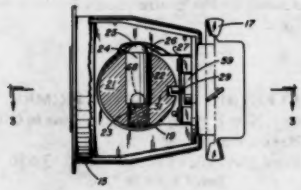
FUZE ARMING DEVICE

Norman Czajkowski, Chevy Chase; Thomas A. Cammack, Beltsville; William C. Pickler, Fulton, and William J. Donahue, Takoma park, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 15, 1965, Ser. No. 449,380

Int. Cl. F42c *15/12*

U.S. Cl. 102—70.2 GA **1 Claim**



1. In a fuze for a bomb adapted to be dropped from an aircraft and armed in free fall flight,

a casing,

an arming rotor rotatably mounted in said casing for movement from an initial safe position to an armed position in incremental distances,

a time delay mechanism connected to the rotor for preventing movement of the rotor for a predetermined time interval,

said time delay mechanism including a stored energy spring means for moving the rotor through a first incremental distance prior to said time interval and for moving the rotor through a second incremental distance at the expiration of said time interval,

a rotor locking means connected to said rotor for releasing said rotor for movement through said first incremental distance by said stored energy means when the bomb is subjected to a predetermined minimum air velocity and for starting said time delay mechanism, and

an environmentally powered driving means mounted upon said casing and positioned for driving engagement with the rotor when the rotor has been moved through said second incremental distance for driving the rotor to said armed position,

whereby said bomb is armed after the expiration of a predetermined time interval subsequent to release of the bomb by the aircraft at normal launching air speeds.

3,768,416

METAL RUNNERS FOR PALLET

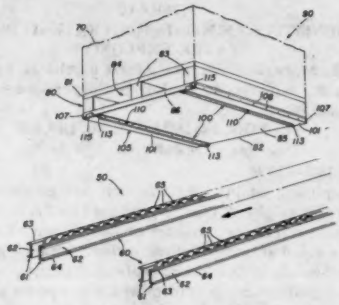
Raymond F. Juechter, Glenwood, Ill., assignor to Interlake, Inc., Chicago, Ill.

Filed May 18, 1971, Ser. No. 144,551

Int. Cl. A63g *21/00*

U.S. Cl. 104—135 **1 Claim**

A rectangular pallet is provided with a pair of integral single-piece metal runners along opposite side edges of the pallet bottom for guiding the pallet along a conveyor having two parallel spaced-apart flights of rollers, each runner including a base plate having a serrated bearing surface thereon, a guide ridge formed in the bearing surface and extending along the inner side edge thereof and provided with ends curved toward the adjacent side edge of said base plate, an attachment flange extending upwardly from the outer side edge of the base plate for engaging the adjacent side surface of the pallet, and end flanges respectively extending upwardly from the opposite ends of the base plate for engaging the adjacent ends of the pallet, the runners being secured to the pallet by fasteners extending through complementary openings in the base plates



and the attachment flanges, the runners being disposed in use with the bearing surfaces respectively engaging the flights of rollers and with the guide ridges disposed along the inner side edges of the adjacent rollers for laterally positioning the pallet with respect thereto.

3,768,417

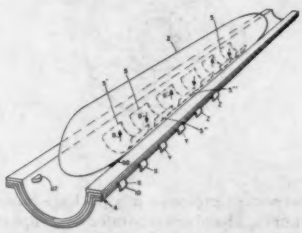
TRANSPORTATION SYSTEM EMPLOYING AN ELECTROMAGNETICALLY SUSPENDED, GUIDED AND PROPELLED VEHICLE

Richard D. Thornton, Concord, and Henry H. Kolm, Wayland, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed July 23, 1971, Ser. No. 165,616

Int. Cl. B61b *13/08*

U.S. Cl. 104—148 SS **29 Claims**



A system that includes an elongate cylindrical vehicle operable to travel along a similarly-shaped, trough-like guideway. At stations along the guideway, the vehicle is supported by wheels, but between stations it levitates at about 25 centimeters above the inside guideway surface. Levitation of the moving vehicle is effected by interaction between magnetic dipole fields provided by superconducting coils or permanent magnets disposed over substantially the whole lower surface area of the vehicle and a pair of spaced conducting strips located on the guideway inner surface and oriented parallel to the longitudinal axis of the guideway throughout its length. The vehicle is free to rotate or pivot about its longitudinal axis and this, coupled with the very resilient support over its entire length, permits it to travel at 200 kilometers per hour and beyond with minimum discomfort to passengers being transported. The magnet dipole fields must be of the order of 1,000 to 3,000 gauss at a distance of 25 centimeters from the vehicle to give the support necessary to maintain the 25 centimeter clearance. The necessary propelling force is supplied by a polyphase winding which is disposed in the lower portion of

the guideway between the conducting strips; the winding produces a traveling-wave magnetic field that interacts with the magnetic dipole fields. Between stations synchronous operation is accomplished by employing a.c. power input with a cycloconverter, i.e., an a-c to a-c converter, to reduce the input frequency to an appropriate ratio. Acceleration and deceleration of the vehicle is accomplished by varying the frequency of the cycloconverter to provide synchronous interaction between the magnetic field of the winding and the magnetic dipole fields of the superconducting coils as the vehicle accelerates. Provision is made for switching vehicles, and a novel method of guideway fabrication is disclosed.

3,768,418

PNEUMATIC TRANSPORTER

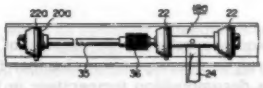
Banzo Yoshida, 14-5, 3-chome, Narita Higashi, Suginami-ku, Tokyo, Japan

Filed Feb. 22, 1972, Ser. No. 227,896

Claims priority, application Japan, Feb. 22, 1971, 46/8060; May 4, 1971, 46/29617

Int. Cl. B61b *13/10*

U.S. Cl. 104—161 **7 Claims**



A pneumatic transporter for conveying articles by driving a runner received in an air pipe by compressed air conducted therethrough, wherein the air pipe is bored with a slit linearly extending along its full length; there are tightly attached to both edges of said slit two elastic members extending similarly lengthwise of the entire air pipe so as to define therebetween a linear airtight contact section; the runner has an arm fixed thereto at one end and projected at the other end to the outside of the air pipe through said airtight contact section; and the article is conveyed by a carriage engaged with said projected end of the runner arm.

3,768,419

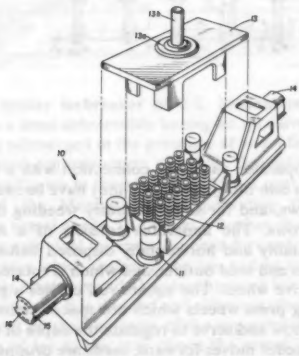
DAMPENED RAILWAY FREIGHT CAR TRUCK

Paul D. Howard, Ft. Worth, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Nov. 25, 1970, Ser. No. 92,626

Int. Cl. B61f *5/12, 5/26*; **B61h** *13/00*

U.S. Cl. 105—182 R **15 Claims**



This invention relates to a freight car truck and more particularly to a center suspension system mounted on the center of the truck bolster, to individually mounted wheels having separate brake systems, and to a side frame which enjoys rotational freedom about a bolster axle.

3,768,420

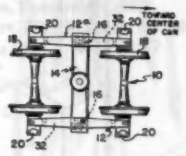
DAMPENED RAILWAY CAR TRUCK

James Shafer, deceased, late of East Cleveland, Ohio, and by Ralph L. Peckinpaugh, executor, East Cleveland, Ohio, assignors to Jack Shafer; James K. Shafer; James R. Shafer and Marilyn S. Thatcher, Vienna, W. Va., part interest to each

No Drawing. Filed July 2, 1971, Ser. No. 159,362

Int. Cl. B61f *5/26, 5/12, 5/50*

U.S. Cl. 105—197 D **15 Claims**



A railway car truck in which the bolster supporting springs are so arranged in conjunction with their seats on the respective side frame and on the bolster, that the bolster is urged laterally against an associated confronting column of each of the side frames, to provide for frictional control of the oscillations of the bolster supporting springs. The result is a railway car truck that requires fewer parts, thus being more economically desirable, but still possessing an effective arrangement for frictionally damping the oscillation of the truck springs, and without materially effecting the wear life of the springs.

3,768,421

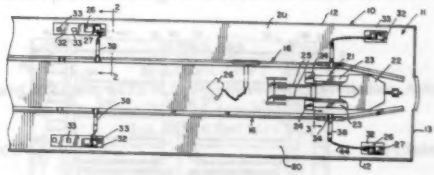
CONTAINER BRACKET ARRANGEMENT FOR RAILWAY CAR

Harold E. Gramse, Chicago Heights, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed June 12, 1972, Ser. No. 262,170

Int. Cl. B65j *1/22*; **B60p** *7/08*

U.S. Cl. 105—366 D **6 Claims**



A railway flat car having trailer hitches for supporting trailers thereon includes a bracket arrangement for supporting containers when the car is utilized for container operation. The bracket arrangement comprises a plurality of brackets some of which are slidably connected to rub rails spaced inwardly and extending longitudinally with respect to the car. Flexible elements connect the container brackets to the rub rails and permit the storing of the brackets therebetween.

3,768,422

WATER DRAIN STRUCTURE FOR RAILWAY CAR DOOR ARRANGEMENT

William R. Shaver, Hammond, and Ernest J. Nagy, Munster, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.

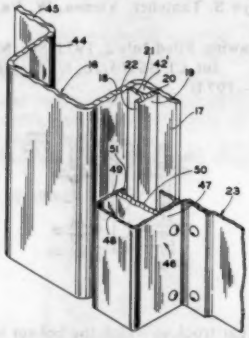
Filed Mar. 20, 1972, Ser. No. 236,050

Int. Cl. B61d *17/08, 19/00*

U.S. Cl. 105—409 **5 Claims**

A railway car door of the sliding plug type is positioned within the door frame arrangement in the side of a car. The

door frame arrangement comprises horizontally spaced side posts, an upper horizontally extending side plate structure and a lower side sill. The upper side plate structure includes a U-shaped trough which terminates adjacent corners of the door post and includes downwardly extending openings which com-



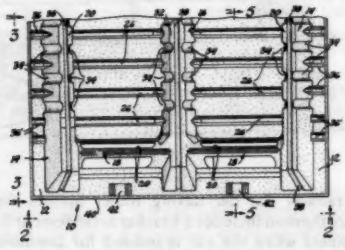
municate with a tubular drain at each door post arranged to drain rain water downwardly below the door opening of the car. The tubular drain element also is constructed in a manner to effectively cooperate with adjacent vertical edge structures of the door to prevent water from entering the car through the door framing structure.

3,768,423

PALLET

James M. Cook, III, Bloomfield Hills, and Eugene Dow, Royal Oak, both of Mich., assignors to Oakland Plastics Corporation, Troy, Mich.

Filed Aug. 16, 1971, Ser. No. 171,837
Int. Cl. B65d *19/00, 19/38*
U.S. Cl. 108—51 5 Claims



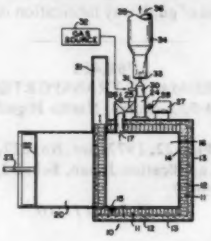
This invention relates to an integral one piece pallet made of plastic and including a platform section with three support legs depending therefrom and extending from one side of the pallet to the other. Strengthening ribs, which are generally W shaped in cross-section, are disposed adjacent the side of the pallet and extend between the support legs with the bottoms of the ribs being substantially coplanar with the bottoms of the support legs. These W-shaped strengthening ribs have openings therethrough through which a lift device may be inserted. Reinforcing ribs extend between the support legs and their lower extremities are disposed above the openings in the strengthening ribs so as not to be engaged by the lift means inserted through the openings in the strengthening ribs.

3,768,424

APPARATUS AND METHOD FOR THE PYROLYSIS OF SOLID WASTE MATERIAL

William T. Hage, Orlando, Fla., assignor to Mechtron International Corporation, Orlando, Fla.

Filed Jan. 7, 1972, Ser. No. 216,198
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 R 9 Claims



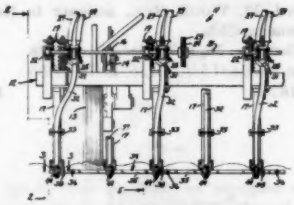
A method and apparatus for the disposal of solid material, utilizing a pyrolytic decomposition chamber for heating the material to its decomposition temperature in the absence of air and utilizing the vaporized material therefrom with air and a combustible gas, such as propane, in a combustion chamber for the further reduction of the vaporized material. The heat generated in the combustion chamber is utilized through a heat exchanger to transfer heat to the primary heating chamber.

3,768,425

PRESS WEEDER

Edwin A. Seifert, Jr., Rt. 1, Belgrade, Mont.

Filed Dec. 30, 1971, Ser. No. 214,109
Int. Cl. A01c *5/00;* A01b *39/19*
U.S. Cl. 111—85 18 Claims



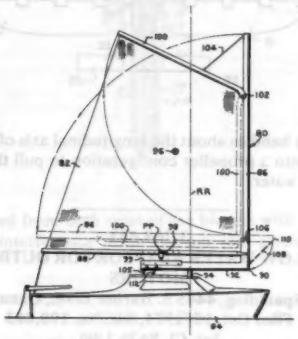
Farming apparatus usable in connection with a seeder for pressing seeds into the ground after they have been dropped in aligned furrows, and for simultaneously weeding the ground between furrows. The apparatus consists of a square rod which is rotatably and horizontally disposed behind furrow-making blades and seed outlets, and which is rotated by an independent drive wheel. The square rod carries a plurality of freely rotating press wheels which are spaced thereon to follow in the furrow and serve to regulate the depth of the square rod. As the seeder moves forward, seeds are dropped into the previously made furrow and pressed into the soil by the freely rotating wheels. Simultaneously, the square rod is rotated by the drive wheel, and the soil between seed rows is turned over to loosen and remove weeds.

3,768,426

SAILBOAT RIGGING

Kenneth E. Kratz, P.O. Box 356, Westport, N.Y.

Filed Feb. 29, 1972, Ser. No. 230,334
Int. Cl. B63b *15/00*, *35/72*; B63h *9/04*
U.S. Cl. 114—39 20 Claims



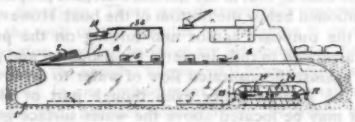
A sailboat in which an upwardly-extending mast is mounted upon the hull for free swinging movement about an upwardly-extending axis of rotation located aft of the mast and the boom is mounted for free pivotal movement about a pivotal axis extending transverse to both the axis of rotation and the boom intermediate the ends of the boom to allow upward and downward movement of the opposite ends of the boom, thus tending to balance the tension at the leech and the luff of the sail. In a gaff-rigged sailboat, the mast is hinged near its bottom end and the gaff is hinged to the mast near the top end of the mast so that the gaff can be folded against the mast and the mast and gaff together can be folded to a fore and aft position for ready transport of the sailboat, with minimal dismantling of the rigging.

3,768,427

ICEBREAKER OIL TANKERS

Robert Melling Stephens, 296 Matheson Ave., Winnipeg, Manitoba, Canada

Filed Oct. 30, 1970, Ser. No. 85,329
Int. Cl. B63b *35/12*
U.S. Cl. 114—41 12 Claims



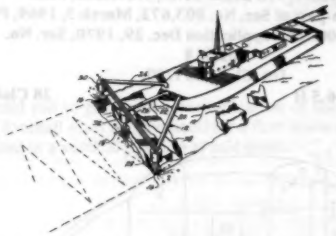
An oil tanker icebreaker of S.S. Manhattan proportions defined as a semi-submersible having an oil carrying hull portion riding submerged in the presence of an oil field and a narrow enclosed superstructure upwardly depending therefrom confronting the ice in the amount of 25 per cent of that which confronted the Manhattan and providing the bouyancy reserve the vessel needs. The vessel is further characterized by three large cast steel ice saws disposed forward of the narrow superstructure which undercut the ice, and an ice ramp which transversely fractures and elevates the sawn ice above the ice sheet level where it is divided and sideways displaced atop of the ice sheet by the fine prow of the superstructure leaving a path clear of ice to the rear. Since the vessel is designed to navigate without the assistance of a conventional icebreaker, supplementary water ballast compartments additional to the regular ballast tanks are incorporated on the bottom of the hull containing a multiplicity of perforations, the water ballast being ejected therethrough to provide an upward force of considerable magnitude either by the admission of compressed air or alternatively including the extraction of the latent heat in the exhaust steam normally wasted, enabling the vessel to break out of and maneouver in any polar ice situation it may encounter. Two unconventional forms of propulsion are included which eliminate the phenomena of propeller slip, while the efflux of jet turbines is utilized to truncate hummocks and high ice ridges. A special rudder also functions as a vessel water-brake.

3,768,428

SWEEP ICE CUTTER

Joseph F. Schirtzinger, Pasadena, Calif., assignor to Air Logistics Corporation, Pasadena, Calif.

Filed Nov. 24, 1971, Ser. No. 201,902
Int. Cl. B63b *35/12*
U.S. Cl. 114—42 13 Claims



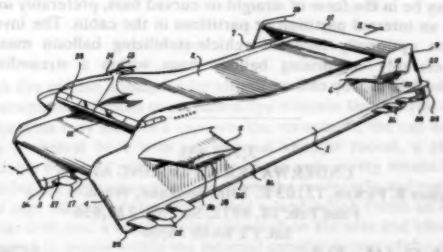
There is provided a structure for mounting on the bow of a marine vessel or structure to cut ice into sections which are readily broken or discarded by the vessel or structure. The system comprises a pair of fixed or adjustable end ice cutters positioned ahead of the port and starboard of the vessel or structure. Between the end cutters there is provided at least one movable cutter which traverses the path between the end ice cutters. The traversing action of the movable cutter cuts the ice between the end cutters into sections which are easily broken or discarded by the bow of the vessel or the structure being protected to permit free passage of the vessel through the ice and prevent damage to the structure due to ice flows.

3,768,429

WATERCRAFT

Richard R. Greer, 6122 E. Indian School Rd., Scottsdale, Ariz.

Filed Mar. 2, 1972, Ser. No. 231,194
Int. Cl. B63b *35/44*
U.S. Cl. 114—43.5 18 Claims

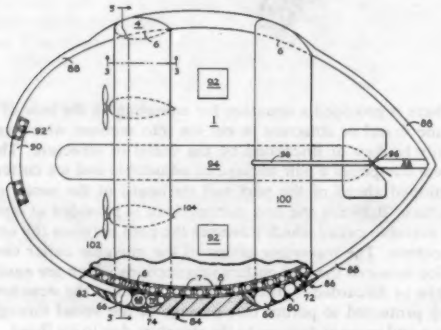


An air supported watercraft for transporting cargo is disclosed. The watercraft is supported by lift generated by: a planar surface set at a given angle of attack with respect to the air stream, air foil surfaces, vanes within the water and to some extent by the displacement of water. The control system

for maneuvering the watercraft interacts with the water through which the watercraft is traveling. The control system orients the watercraft with respect to the surface of the water, which orientation has the effect of altering the angle of attack of the planar surface and the air foils and thereby modifies their effectiveness. The watercraft employs a docking system extending from the sides thereof, which docking system cooperates with a pair of land based guide rails. On docking, the watercraft is "flown" onto these guide rails and then slowed down. As the watercraft slows down, the guide rails begin to support its weight. Similarly, when the watercraft departs from the dock and begins to accelerate, the surfaces interacting with the airstream begin to support the watercraft with less and less dependence on the guide rails for support.

3,768,430
LIGHT-WEIGHT, CRASH-RESISTANT, VEHICULAR BODY

Alvin Edward Moore, 916 Beach Blvd., Waveland, Miss.
Continuation-in-part of Ser. No. 803,672, March 3, 1969, Pat. No. 3,574,300. This application Dec. 29, 1970, Ser. No. 102,318
Int. Cl. B63b *1/20*
U.S. Cl. 114—66.5 H **28 Claims**

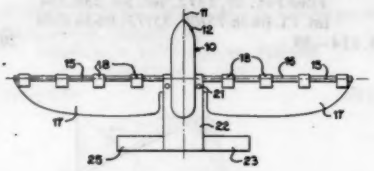


A wreck-resistant, light-weight, preferably barrel-curved, vehicular cabin or body, adapted for use in boats, cars, aircraft and space vehicles, comprising: light-weight, strong, cabin-wall, preferably endless ribs, preferably epoxy-bonded together in a fore-and-aft series; and waterproof skin means around the ribs. These ribs comprise gas-containing tubular members, sheathed in insulating material, which optionally may be light-weight concrete or foam plastic. Optionally, they may be in the form of straight or curved bars, preferably used in an internal partition or partitions in the cabin. The invention optionally includes vehicle-stabilizing balloon means, preferably comprising balloon bags within a streamlined sheath at the top of the cabin.

3,768,431
UNDERWATER SWIMMING AID

James B. Picken, 13103 E. 13th, Spokane, Wash.
Filed Feb. 28, 1972, Ser. No. 229,856
Int. Cl. B63h *16/00*
U.S. Cl. 115—22.3 **4 Claims**

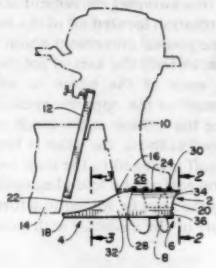
A manually operated underwater swimming aid for use in propelling a diver or swimmer below the surface of the water. The aid facilitates such propulsion through oscillating motion imparted by the diver to a pair of resilient planar blades. The blades are anchored to an axial support which includes an enclosed air cavity to permit neutral buoyancy of the aid. Handles are provided rearward of the support for gripping by the swimmer. Subsequent manual application of oscillating torque



forces to the handles about the longitudinal axis of the aid flex the blades into a propeller configuration to pull the swimmer through the water.

3,768,432
SHALLOW WATER ADAPTOR FOR OUTBOARD MOTORS

Edward H. Spaulding, 4445 S. Harbor Blvd., Oxnard, Calif.
Filed Oct. 18, 1971, Ser. No. 190,063
Int. Cl. B63h *5/06*
U.S. Cl. 115—42 **7 Claims**



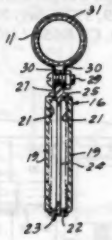
A member adapted for coaction and operative association with an outboard motor and more specifically, the cavitation plate thereof whereby the boat with which the outboard motor is used may be operated in shallow bodies of water by the expedient of being able to aspirate ambient water to permit placement of the propeller of the outboard motor at a selected one of a plurality of positions wherein the propeller is capable of being positioned at various points with respect to the bottom of the boat so that in the normal state, the propeller is not fully positioned below the bottom of the boat. However, upon starting the outboard motor and turning on the propeller, water is aspirated to fully immerse the propeller and permit it to work against the aspirated flow of water to drive the boat through the shallow water even though part or all of the propeller may be located above the water surface generated by the hull bottom at planing speed.

3,768,433
SIDE REFLECTORS FOR BICYCLES AND THE LIKE

Walter Dian, Downers Grove, and Gerald Golden, Highland Park, both of Ill., assignors to Excel Incorporated, Franklin Park, Ill.
Filed Aug. 10, 1972, Ser. No. 279,480
Int. Cl. B60q
U.S. Cl. 116—28 R **4 Claims**

Side reflector assemblies for bicycles having reflective surfaces on both sides of the reflector assembly and mounted on the bicycle to reflect light from both sides of the bicycle without interference from the rider. The internal faceted reflective faces of the reflectors are sealed by the mounting means therefor, and the reflectors are clamped to a bar of the bicycle adjacent the front of the bicycle and to the angular bar

forming a mounting for the seat post along the upper portion thereof. This so positions the reflector that the two reflectors



can be viewed from both sides of the bicycle with a minimum amount of interference from the legs and garments of the rider.

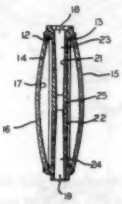
ERRATUM

For Class 116—63 see:
Patent No. 3,768,383

3,768,434
REFLECTIVE MARKER DEVICE

John K. Pinter, Cedarburg, Wis., assignor to American Reflector Co., Inc., Grafton, Wis.

Filed June 12, 1972, Ser. No. 261,822
Int. Cl. E01f 9/10
U.S. Cl. 116—63 **10 Claims**



A marker comprises an annulus having a circumferential groove on each edge to receive reflective lenses which face in opposite directions. There are diametrically opposite apertures in the wall of the annulus for installing it on a rod or stake. Friction creating surfaces are interposed in the path of the rod within the annulus to prevent it from sliding on the rod unless forced. In one embodiment a tube that is tapered from both ends and extends diametrically between apertures produces the friction. In another embodiment spring-like plastic members in the annulus bear on the rod to produce friction. Means are provided for stacking markers at different angles on a stake.

3,768,435
FOOTBALL YARDAGE MEASURING DEVICE

George L. Dicker, 17938 Irvine Blvd., Tustin, Calif.

Continuation-in-part of Ser. No. 87,531, Nov. 6, 1970, abandoned. This application May 12, 1972, Ser. No. 252,598
Int. Cl. G01d 21/00
U.S. Cl. 116—114 R **11 Claims**

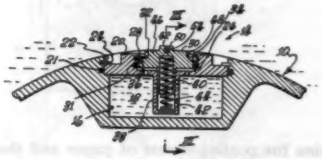
A football yardage measuring device and method for using same. The device includes an elongate rod of sufficient length to reach a football from one of the plural established yardage lines on the football field regardless of where said football is on the football field, a reference marker and a slideable measuring pointer mounted on said rod to enable accurate distance measurement between a football and a yardage line by one individual, and a visual indicator attached to one end

of said rod to present a clear indication of the point to which the football must be advanced for a first down when said rod is placed in a vertical position at said point.

3,768,436
DYE RELEASE APPARATUS

Leonard J. Martini, Monrovia, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 30, 1973, Ser. No. 346,375
Int. Cl. G09f 9/00
U.S. Cl. 116—124 B **9 Claims**

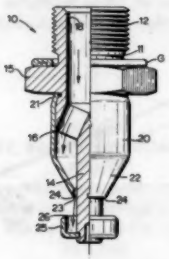


A dye release apparatus for an underwater device which has a receptacle adapted to contain a dye wherein the dye release apparatus may include a cap over the receptacle, the cap having a central bore with an internal annular recess; a plug slidably disposed within the bore of the cap; spring means for biasing the plug upwardly away from the receptacle and out of the cap; the top of the plug having a land which forms an annular seat; and a retainer ring disposed on the seat and biased opened to recess within the internal annular recess of the cap for retaining the plug in the cap against the spring force. With such an arrangement descent of the underwater device causes the plug to be depressed downwardly within the bore of the cap until the retainer ring snaps into an area above the seat, and upon ascent, the spring expels the plug from the cap so that dye within the receptacle is open for dissemination into the surrounding water.

3,768,437
SOUND GENERATOR

Bote Gosse Bruinsma Como, Quebec, and Eustace Cosmo Shuffler, Lachine, Quebec, both of Canada, assignors to Dominion Engineering Works, Limited, Lachine, Quebec, Canada

Filed July 19, 1971, Ser. No. 163,784
Claims priority, application Canada, July 29, 1970, 89426
Int. Cl. B06b 3/00
U.S. Cl. 116—137 A 4 Claims

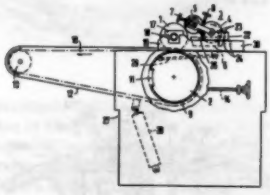


An improved whistle for sound generation having a unitary stem and body, combined with a simplified plug type mount provides a robust readily installed whistle of predetermined stable resonance characteristic for commercial application.

3,768,438
MACHINE FOR COATING SHEETS OF PAPER AND THE LIKE WITH LIQUID COATING MATERIALS

Wilhelm Kumpf, No. 38, Am Anger, Erlangen, Germany

Filed Sept. 1, 1971, Ser. No. 176,856
Claims priority, application Germany, May 19, 1971, P 21 24 825.9
Int. Cl. B05c 1/06
U.S. Cl. 118—262 6 Claims

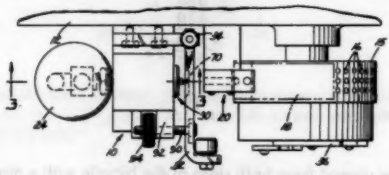


A machine for coating sheets of paper and the like with liquid coating materials, in which the sheets are conducted without the application of pressure between a smooth coating roller and a larger diameter format roller, preferably rotating at different peripheral speeds, for coating the entire surfaces of said sheets, a feed roller accepting the coating material from a fountain roller dipping into a supply of coating material and transferring a film of desired thickness to the coating roller. For applying the coating material to predetermined parts of the surfaces of sheets the smooth coating roller together with special chocks mounted in bearing supports is removable from the machine and replaceable by a screen roller provided with screen surfaces corresponding to the surfaces that are to be coated. The screen roller revolves at the same peripheral speed and has the same diameter as the format roller, besides being mounted in taller chocks adapted to its larger diameter, but insertable into the same bearing supports. A doctor blade cooperates with the screen roller attachable to existing fixing means. The format roller is designed to withstand the high roller pressures required for gravure printing.

3,768,439
ADHESIVE APPLICATOR

Roy C. Schweitzer, Richmond Heights, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Feb. 19, 1971, Ser. No. 116,991
Int. Cl. B05c 11/00
U.S. Cl. 118—315 2 Claims

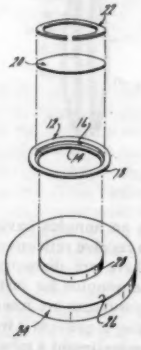


A method and apparatus for applying adhesive to labels wherein a metered discrete amount of adhesive is ejected in an area related pattern onto the rear of a label from a nozzle assembly responsive to the position of the label on a delivery device.

3,768,440
STAIN SYSTEM FOR MEMBRANE FILTERS

Patrick A. Doman, Farmington, Mich., and Ronald N. Wilkie, New Baltimore, Mich., assignors to Gam Rad, Incorporated, Detroit, Mich.

Filed July 25, 1972, Ser. No. 274,980
Int. Cl. B05c 11/14
U.S. Cl. 118—503 14 Claims



A stain system for staining membrane filters including a stain basket for securely holding and carrying a plurality of membrane filters each supported in a filter assembly which provides substantial circumferential support for the filters and which is of a simple two piece construction which can be easily assembled and taken apart.

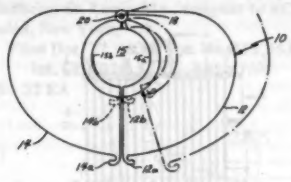
3,768,441
ANIMAL REPELLING DEVICE

George K. Laham, 160 Beech St., Boston, Mass.

Filed Jan. 27, 1972, Ser. No. 221,191
Int. Cl. A01k 29/00
U.S. Cl. 119—1 3 Claims

An animal repelling device has a repeller member formed of two pivotally connected sections each having cut-out portions providing an opening to receive a post or drain pipe on which

the device is mounted. Each section has a flange below that borders said opening, and each has a catch member at the



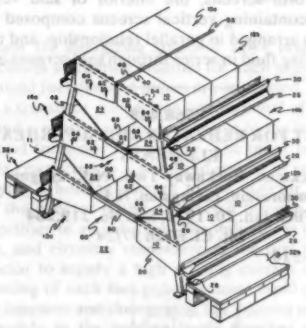
front which can be fastened together to hold the repeller member firmly in place.

3,768,442

MULTI-TIER CAGE CONSTRUCTIONS

Robert L. Van Huis, Zeeland, Mich., assignor to U.S. Industries, Inc., New York, N.Y.

Filed Feb. 22, 1972, Ser. No. 227,793
Int. Cl. A01k *31/06*
U.S. Cl. 119—18 **4 Claims**



A low profile tri-deck cage assembly having a pair of mutually facing row of cages in each tier is serviceable from a single walk-way adjacent each side of the lower cage level. Each cage profile is reduced by providing a horizontal top panel for each cage which includes openings to permit poultry confined therein to extend their head and neck out so that they can stand upright in the cage. An offset pyramid arrangement of the tiers includes horizontal support members for suspending the cages from the top, at least a portion of which is suspended over a dung-collecting pit. Collecting trays are suspended below the remaining cage portions to prevent droppings from an upper cage into a lower one and a scraper removes the catchings into the pit.

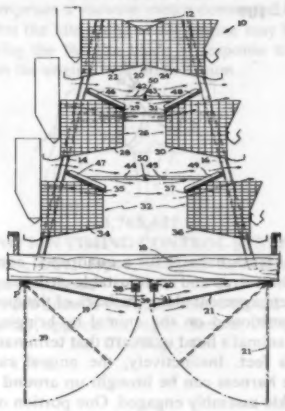
3,768,443

MANURE DRYING SHED ARRANGEMENT

Everett M. Keen; Anthony J. Siciliano, and David A. Keen, all of Vineland, N.J., assignors to Diamond International Corporation, New York, N.Y.

Filed Dec. 1, 1971, Ser. No. 203,807
Int. Cl. A01k *31/04*
U.S. Cl. 119—22 **8 Claims**

A manure drying shed arrangement for starter-grower-layer cage batteries, in which chicks are kept and may be raised to maturity, comprising in combination batteries of cage rows supported by A-frames which are in turn supported on transversely extending joists. The batteries of cage rows are arranged at different elevational levels with the topmost battery being supported at the apex of the A-frame. Each battery includes a pair of cage rows each of which is secured to one leg of the A-frame. The cage rows of the lower batteries are provided with overhead manure drying sheds upon which some of the droppings from the battery above may be caught. Drying



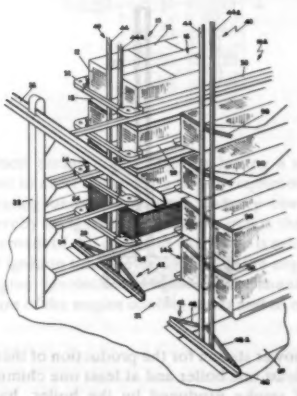
sheds are also provided beneath the lowermost battery to catch the droppings from the lowermost battery as well as any dropping not caught by the overhead sheds.

3,768,444

MULTI-DECK CAGE CONSTRUCTION

Robert L. Van Huis, Zeeland, Mich., assignor to U.S. Industries, Inc., New York, N.Y.

Filed Apr. 21, 1972, Ser. No. 246,168
Int. Cl. A01k *31/00*
U.S. Cl. 119—22 **18 Claims**



A modular poultry cage arrangement includes a pair of spaced support structures having one or more vertically spaced inclined cross supports from which are suspended one or more vertically spaced levels of poultry confinement cages. A dung-collecting tray is mounted on each cross support to collect droppings from the cages thereabove. A scraper mounted on a carriage movable fore and aft along a rail intermittently cleans the trays. A boom pivotally mounted from the carriage supports a scraper blade near its free end for pivotal movement about a horizontal and vertical axis to permit scraping engagement with the tray regardless of the direction of movement of the carriage. Stops limit the degree of pivot to provide a proper scraping angle.

3,768,445

ADJUSTABLE ANIMAL HARNESS

Delmar Lynn Sorrels, 4412 37th Avenue, Sacramento, Calif.

Filed Mar. 27, 1972, Ser. No. 238,436
Int. Cl. A01k *01/06*
U.S. Cl. 119—109 8 Claims

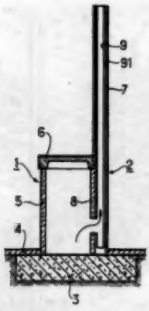
An animal leash harness for a quadruped composed of an adjustable chest strap and an adjustable girth strap adapted for overlapped engagement along the back of the quadruped. The harness is positioned on the animal by bringing it down in front of the animal's head in an arc that terminates just above the animal's feet. Instinctively, the animal raises his feet whereby the harness can be brought up around its front legs and the buckle assembly engaged. One portion of the harness has an elongated leash hook slot and another portion is provided with a leash hook. The outer dimension of the hook is greater than the length of the slot.

3,768,446

THERMAL POWER PLANTS

Paul Gerard, Creteil, France, assignor to Societe Generale D'Entreprises, Paris, France

Filed Oct. 29, 1971, Ser. No. 193,845
Claims priority, application France, Oct. 30, 1970, 7039318
Int. Cl. F22b *37/36*
U.S. Cl. 122—1 8 Claims



A thermal power station for the production of thermal energy, having at least one boiler and at least one chimney for the evacuation of smoke produced by the boiler, has for said boiler and said chimney at least one tower, one portion of which is common.

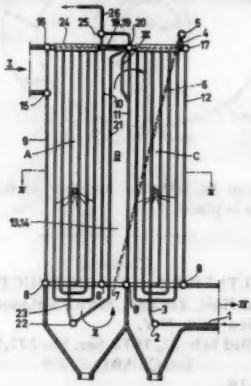
3,768,447

ECONOMIZER WITH FLUES CONNECTED IN SERIES

Gosta Kallstrand, Jarfalla, Sweden, assignor to AB Svenska Maskinverken, Kallhall, Sweden

Filed Mar. 16, 1972, Ser. No. 235,190
Claims priority, application Sweden, Mar. 31, 1971, 4175/71
Int. Cl. F22d *1/02*
U.S. Cl. 122—421 1 Claim

An economizer, comprising a plurality of vertical gas passageways disposed with their axes parallel to each other and having inlets and outlets therein so that a heated gas can flow serially therethrough, the walls of said vertical gas passageways comprising a plurality of tubes that are disposed in essentially parallel relationship to each other and welded



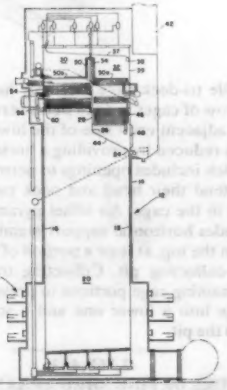
together to form screens, the interior of said vertical gas passageways containing vertical screens composed of a plurality of tubes arranged in parallel relationship, and means for passing a cooling fluid in series through said screens and tubes.

3,768,448

SUPPORT FOR REHEATER AND SUPERHEATER ELEMENTS

Eugene B. Beckman, Rockaway Twp., N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed Jan. 20, 1972, Ser. No. 219,264
Int. Cl. F22b *37/24*
U.S. Cl. 122—510 9 Claims

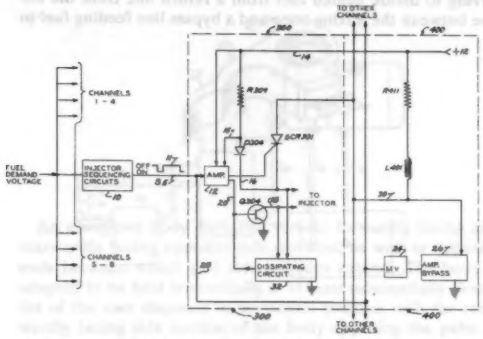


A support for reheater and superheater elements of a vapor generator. A plurality of vertically oriented tube panels define a rectangular enclosure in which the elements are contained. Pairs of horizontal tube sections extend across the face of opposite panels of the enclosure sufficiently spaced from the panels to support the elements. These sections are continuations of riser tubes which occupy positions along opposite sides of the panels. Each tube section is bent inwardly from the plane of its panel, at one side of the panel, and then is bent back into the plane of the panel at the opposite side, after traversing the face of the panel. It occupies a position vacated as a result of traverse of the face of the panel by the companion tube section of the tube pair.

3,768,449
ELECTRONIC ENERGIZING SYSTEM FOR SOLENOID FUEL INJECTORS

Allen W. Lindberg, St. Louis, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,363
Int. Cl. F02m *51/06*; F02b *3/00*
U.S. Cl. 123—32 EA 7 Claims

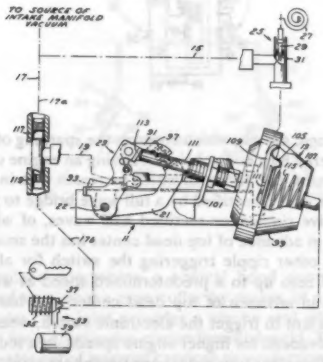


A system for energizing solenoid valve injectors sequentially, includes a separate channel for each injector on which synchronized fuel demand pulses are impressed. Each channel includes a transistor connecting one terminal of its injector to ground and a control circuit responsive to the input pulses for making said transistor conductive. The other terminal of the injector is connected to a stabilized source of voltage capable of supplying a holding current to the injector, and said terminal of the injector is also connected through a silicon controlled rectifier to an inductor. The inductor is common to all channels, and circuitry responsive to the fuel pulses enables the inductor to supply a high starting current in response to the beginning of each fuel pulse to cause rapid opening of the solenoid injectors and then permit the injector current to drop approximately to the holding level. Another circuit rapidly dissipates the injector current at the end of a fuel pulse.

3,768,450
AUTOMATIC IDLE SPEED CONTROLLER

Robert S. Harrison, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 23, 1971, Ser. No. 211,517
Int. Cl. F02d *11/10*
U.S. Cl. 123—103 12 Claims

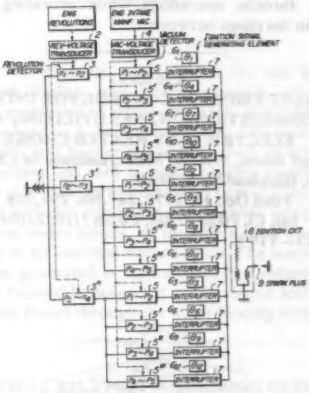


A speed controller to maintain a constant idle speed in an internal combustion engine experiencing variable accessory loads. Basic apparatus includes a sensor-modulator assembly and a throttle actuator means. The sensor-modulator provides a vacuum signal to the throttle actuator means based on intake manifold vacuum and throttle plate angle. The throttle actuator means comprises a vacuum motor connected to the throttle lever so that the idle speed of the engine may be kept constant by moving the throttle blade in response to the engine load affects on the engine manifold vacuum.

3,768,451
IGNITION TIMING CONTROL SYSTEM

Hisaji Okamoto, Obu, Japan, assignor to Nippondenso Co., Ltd., Kariya-shi, Japan

Filed June 3, 1971, Ser. No. 149,472
Claims priority, application Japan, June 6, 1970, 45/49052
Int. Cl. F02p *5/08*
U.S. Cl. 123—117 A 2 Claims



An ignition timing control system having a set of ignition times preset to meet the ignition timing requirements of an engine operating under various satisfactory operating conditions, whereby an ignition time which meets the ignition timing requirement of the engine at each time is selected from the said set of ignition times to be applied to the engine according to the engine revolutions, engine intake manifold vacuum, temperature of the engine cooling water and so on.

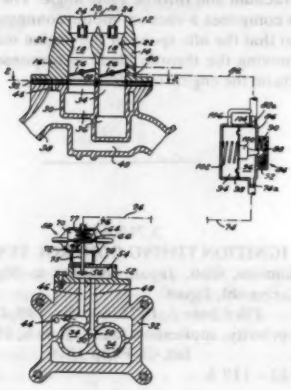
3,768,452
ENGINE EXHAUST GAS RECIRCULATING CONTROL

John A. Lewis, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 4, 1972, Ser. No. 241,044
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A 9 Claims

The engine has a duct connecting the exhaust gas crossover passage to the intake manifold, the duct normally being closed by a valve that is opened by manifold vacuum connected thereto past an air-bleed device that normally is closed and opened against a spring force by manifold vacuum above a predetermined level so that the gas recirculating valve opening signal force varies directly with manifold vacuum below

the predetermined level and inversely above the level to prevent recirculation during engine idle and cruising and



wide-open throttle operations while providing controlled operation in the range between.

3,768,453

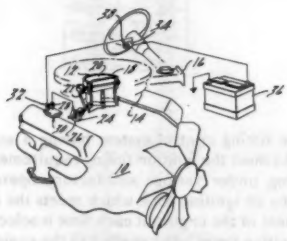
EXHAUST EMISSION CONTROL FOR INTERNAL COMBUSTION ENGINES UTILIZING AN ELECTRICALLY HEATED CHOKE

Francis Carl Hurst, Wixom, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Oct. 13, 1972, Ser. No. 297,518

Int. Cl. F02d *11/08*; **F02m** *1/10, 23/04*

U.S. Cl. 123—119 F **13 Claims**



In a motor vehicle having an internal combustion engine including a carburetor for mixing fuel and air together prior to combustion in a cylinder, an electrically heated choke is provided to shorten the time period of choke operation at ambient temperatures greater than 68°F. A pair of thermostatic control switches control the operation of a choke heater adjacent to the choke during engine starting and warm-up, thereby reducing hydrocarbon and carbon monoxide emissions.

3,768,454

FUEL HEATER

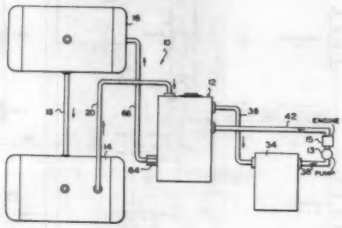
Richard D. Markland, Menlo Park, Calif., assignor to Consolidated Metco, Inc., Portland, Oreg.

Filed July 6, 1971, Ser. No. 159,712

Int. Cl. F02m *31/14, 59/00*

U.S. Cl. 123—122 E **6 Claims**

One diesel heat mixer (FIGS. 1–3) has a temperature responsive flow divider valve positioned between fuel tanks and an engine and responsive to temperature of fuel being supplied to the engine by a feed line mixed with fuel returned from the engine. The valve divides heated fuel from a return line from the engine to direct the flow either to the tanks or the feed line, which is also supplied with cool fuel from the tanks and leads from the valve to the engine. A second diesel heat mixer (FIGS. 4–7) has a mixing zone defined by two baffles in a fuel tank, and fuel to an engine is drawn from a standpipe unit in the mixing zone, a temperature responsive valve serving to divide heated fuel from a return line from the engine between the mixing zone and a bypass line feeding fuel to



a second tank connected to the first tank, the proportions flowing to each being controlled by the temperature of fuel supplied from the mixing zone. The standpipe unit has a mounting plate covering an opening in the tank, and the mounting plate carries a standpipe and a return tube directing returned, heated fuel away from the entrance end of the standpipe. A third diesel heat mixer has a reversible fuel tank having a baffle near one end to form a confined mixing zone to which heated fuel is supplied by a return line and from which mixed fuel is removed. Each of the valves has a heat expansible unit engaging one end of a spring-pressed spool and positioned in a passage from the tanks to the feed line.

3,768,455

IGNITION ARRANGEMENT FOR INTERNAL COMBUSTION ENGINE

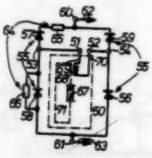
Gerhard Imhof, Rothenbach, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed May 7, 1971, Ser. No. 141,166

Claims priority, application Germany, May 20, 1970, P 20 24 474.0

Int. Cl. F02p *5/08, 1/02*

U.S. Cl. 123—148 E **5 Claims**



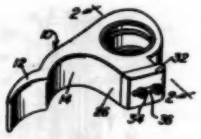
An electronic switch, which controls the sparking of a spark plug is triggered by a control circuit having an engine operated signal generator, the output of which increases with increasing engine r.p.m. and is rectified by a full wave bridge to produce two successive ripples, or rectified half waves, of which the ripple more in advance of top dead center has the smaller amplitude, the other ripple triggering the switch for all engine speeds from zero up to a predetermined speed at which the ripple more in advance of top dead center also has an amplitude sufficient to trigger the electronic switch, whereby the ignition is advanced for higher engine speeds. In a second embodiment, altogether four successive ripples are produced, the amplitude of a ripple being smaller, for a given engine r.p.m., as the ripple is more in advance of top dead center.

3,768,456

BOW STRING RELEASE

Jep F. Hansen, 3207 Bristow Rd., Grants Pass, Oreg., and Albert L. Hansen, 1280 Oxyoke Rd., Hugo, Oreg.

Filed Sept. 30, 1971, Ser. No. 185,154
Int. Cl. F41c 27/00
U.S. Cl. 124—35 A 7 Claims



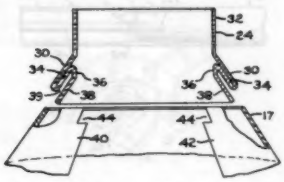
An elongated body including remote forwardly facing and rearwardly facing opposite side surfaces, as well as opposite ends between which said side surfaces extend. The body is adapted to be held horizontally in at least substantially closed fist of the user disposed in horizontal position with the rearwardly facing side surface of the body opposing the palm of the user, and at least some of the forwardly facing side surfaces of the body opposing the inner surfaces of the free end portions of some of the fingers of the hand of the user. One end portion of the body includes an upstanding opening therethrough for the index finger of a user and having a forward terminus defining an elongated transversely extending notch open at its opposite ends and opening laterally toward the end of the body upon which the lateral projection is disposed and the notch is operable to seatingly receive a bow string therein. The opening has removable sleeves positioned therein to receive various size fingers. The bowstring releasably seats behind a flange which forms a portion of the notch. The flange is adjustably shiftable for use with various sizes and types of bow strings.

3,768,457

FIREPLACE CONSTRUCTION

Ray A. Beasey, Huntington, Ind., assignor to American Standard Inc., New York, N.Y.

Filed Dec. 13, 1972, Ser. No. 314,804
Int. Cl. F24b 1/18
U.S. Cl. 126—120 2 Claims



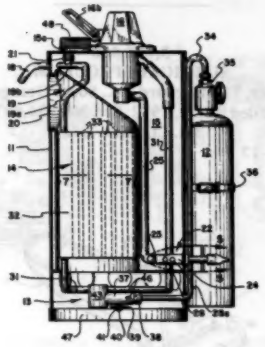
A fireplace comprising a conical hood connected at its upper end to a smoke pipe collar by means of a bead-flange clamp joint. The joint provides a smoke seal while avoiding the need for a continuous circumferential weld. The joint surfaces are devoid of internal crevices or projections that would obstruct air flow or tend to collect moisture or other corrosive materials.

3,768,458

INSTANT WATER HEATER

Garold H. Williams, 43 W. 100 South, Smithfield, Utah

Filed Nov. 3, 1971, Ser. No. 195,281
Int. Cl. F24h 1/06
U.S. Cl. 126—350 R 5 Claims



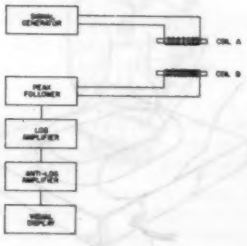
An improved portable water heater for use in outdoor camping, with trailers, and pickup campers, etc. that will rapidly heat quantities of water efficiently and safely. Heat is generated by burning bottled propane gas delivered through a simple and efficient burner apparatus, which directs the heat from the burning gas into a water heating system through which water is circulated to be quickly heated. The improved water heater includes means for alternatively pumping water from a built-in water supply, or through a hose connected to or immersed in an external water source. The temperature of the hot water generated is regulated by the volume of water that a pump located between the water source and the water heating system forces through the water heating system.

3,768,459

CERVICAL DILATION MEASURING DEVICE

Emerson T. Cannon, and Richard M. Hebertson, both of Salt Lake City, Utah, assignors to Utah Research & Development Co., Inc., Salt Lake City, Utah

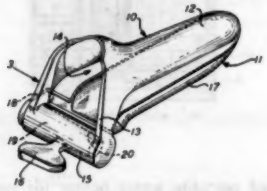
Filed June 28, 1971, Ser. No. 157,154
Int. Cl. A61b 5/05
U.S. Cl. 128—2 S 10 Claims



A measuring device for measuring cervix dilation is disclosed. The device comprises a miniature signal transmitting device attached to one side of the cervix, said transmitting device generating a signal whose intensity varies with the distance from said transmitting device. A miniature receiving device attached to or placed against an opposite side of the

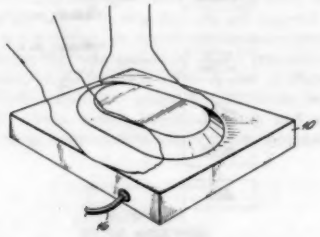
cervix from said transmitting device receives the transmitted signal and generates a signal proportional to said transmitted signal. The signal from said receiving device is passed through translation means to provide a visible display of the intensity of said transmitted signal. The intensity of said transmitted signal is proportional to the distance between the transmitting device and the receiving device.

3,768,460
SURGICAL SPECULUM
Norman Panzer, 71 Blanchard Rd., South Orange, N.J.
Filed Feb. 9, 1972, Ser. No. 224,687
Int. Cl. A61b *1/32*
U.S. Cl. 128—17 **4 Claims**



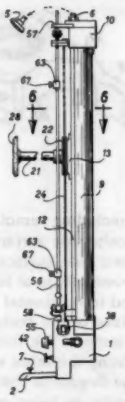
A two piece speculum consists of opposied, canal spreading blades, each having at its outer end a rigidly integral pivot member of which the pivot member of one of the blades is telescoped into the pivot member of the other blade to permit relative pivotal spreading of the two blades about a common axis. The pivot members are capable of being interlocked as, for example, by interengaging teeth or by frictional interengagement of surfaces of the two pivot members to hold the blades in any relative position to which they may be spread; and the contractile force of the canal wall serves to keep the pivot members interlocked to hold the blades in adjusted angular relationship.

3,768,461
APPARATUS FOR RELAXING FEET
William Odell Taylor, 112 Breezeway, Waxahachie, Tex.
Filed Mar. 6, 1972, Ser. No. 232,066
Int. Cl. A61h *29/00*
U.S. Cl. 128—24.2 **1 Claim**



A vibrated and heated flat horizontal foot receiving platform. A heating wire and a vibrator are secured to the underside of the platform. The user's feet are placed on top of the platform to receive heat and vibrations.

3,768,462
SCRUBBING AND MASSAGING APPARATUS
Lucien Boulard, 6167 Durocher St., Montreal, Quebec, Canada
Filed Mar. 24, 1972, Ser. No. 237,781
Int. Cl. A61h *7/00*
U.S. Cl. 128—44 **14 Claims**



An apparatus adapted for scrubbing and massaging the human body and arranged for installation in a bath-room in operative association with shower and bathtub water fixtures, which are either built in therewith or connected thereto. A scrubbing apparatus including a scrubbing head which moves up and down and rotates on itself and the movements of which are caused by a hydraulic cylinder actuated by the water pressure of the usual water supply system in a bath-room.

3,768,463
HEAD SCRATCHER
Darney George Curry, 8630 S. Kenwood Ave., Chicago, Ill. 60619
Filed Mar. 21, 1972, Ser. No. 236,664
Int. Cl. A61h *7/00*
U.S. Cl. 128—67 **4 Claims**

A device is provided for scratching and massaging the scalp, and for combing and lifting depressed areas of bouffant and afro hair styles. The device includes a manual handle and an elongated thin rigid prong adjustably mounted at one end in the handle and extending axially therefrom. A rounded scalp-engaging tip is provided on the terminal end of the prong. A removable cap is provided which is arranged to be positioned over the elongated prong and engaged with the handle to enclose the prong during non-use.

3,768,464

APPARATUS FOR CERVICAL TRACTION

Hans Greissing, Milan, Italy, assignor to Static-S.p.A., Milan, Italy

Filed Feb. 8, 1972, Ser. No. 224,419
Int. Cl. A61h 1/02
U.S. Cl. 128—75 9 Claims

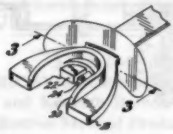
The specification describes an apparatus comprising a positionable seat group fitted with adjustable shoulder and cervical supports for accomodating and securing a patient below a motorized cervical traction and torsion applying assembly and mechanism. The assembly comprises a stationary structure on which a traction and torsion group is supported at adjustable level. Such group is provided with an adjustably counterweighted oscillatable arm having one end portion above said seat, and comprise a member supported for rotation about a vertical axis and having hooking bar for connecting an adjustable cervical haulter therebelow. The mechanism comprises means for controllably oscillating said arm for continuous or intermittent traction, and for selectively and alternatively rotating clock- and counter clockwise said bar, selectively exerting static and/or dynamic treatments to the patient's cervical spine and neighbouring body parts.

3,768,465

ATHLETIC MOUTH PROTECTOR APPARATUS

Norman D. Helmer, 10 63rd Pl., Long Beach, Calif.

Filed Jan. 31, 1972, Ser. No. 222,089
Int. Cl. A61d 15/00
U.S. Cl. 128—136 1 Claim



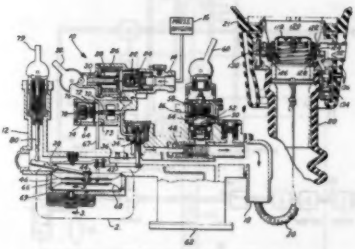
Apparatus for protecting the mouth area of athletes engaged in contact sports. The apparatus includes a thermoplastic base member that is heated to receive a bite from the user whereby his dental impressions are applied to such base member. The base member is formed with breathing orifices. Plugs are removably disposed within the breathing orifices to prevent collapse of such orifices while the bite takes place.

3,768,466

AUTOMATIC OXYGEN BREATHING APPARATUS

Arthur H. Johnson, Davenport, Iowa, assignor to The Bendix Corporation, South Bend, Ind.

Filed Dec. 21, 1970, Ser. No. 99,816
Int. Cl. A62b 7/14
U.S. Cl. 128—142.2 10 Claims



Oxygen regulating apparatus of the demand and pressure breathing type for aircraft pilot use including an atmospheric air pressure responsive device operative to generate a control output signal which operates as a function of a predetermined rate of change of aircraft cabin altitude, upon a predetermined rate of ascent. The control signal causes the oxygen demand valve to open and supply 100 percent oxygen at relatively high flow rate to purge the air from the supply hose leading to the pilot's oxygen mask thereby increasing the alveolar oxygen partial pressure accordingly.

3,768,467

LIFE PRESERVER BUBBLE

Samuel J. Jennings, Phoenix, Ariz., assignor to Community Gin Company, Glendale, Ariz.

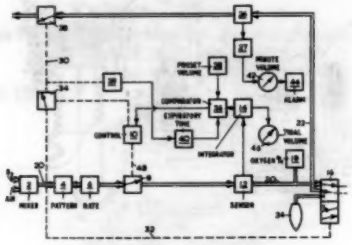
Filed June 18, 1970, Ser. No. 47,352
Int. Cl. A62b 7/00
U.S. Cl. 128—145 R 1 Claim

A self-inflatable bubble for the protection and preservation of life on land and water. The bubble is formed of a pliable air and water impervious material which when arranged around the user provides on environment in which he may comfortably exist in the bubble whether on land or sea. A hook is provided in the bubble interior to provide means to secure the user to the bubble wall to properly position the user within the bubble interior.

3,768,468
VENTILATORS

Lawrence Alfred Cox, North Weald, England, assignor to The British Oxygen Company Limited, London, England

Filed Jan. 18, 1971, Ser. No. 106,960
Claims priority, application United Kingdom, Jan. 21, 1970, 2938/70
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.8 10 Claims

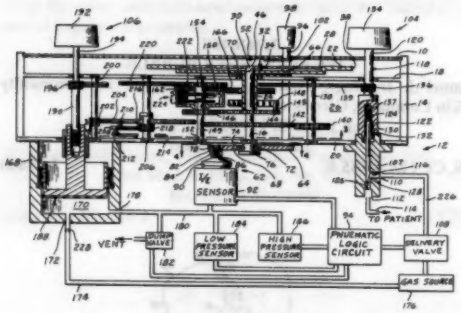


A lung ventilator in which the volume of respirable gas passing to the patient per unit time is continuously measured and the flow stopped, to mark the end of the inspiratory phase and the start of the expiratory phase, when a chosen volume has passed through the meter.

3,768,469
INDICATOR FOR VOLUME VENTILATOR APPARATUS

William P. Myers, Davenport, Iowa, assignor to The Bendix Corporation, South Bend, Ind.

Filed Dec. 20, 1971, Ser. No. 209,674
Int. Cl. A62d *7/00*
U.S. Cl. 128—145.8 14 Claims



A panel display for instantaneously indicating the inter-relationship of flow rate, frequency, inspiration to expiration ratio, tidal volume and minute volume of a breathing apparatus.

3,768,470
EAR PROTECTOR

Howard S. Leight, 16027 Northfield St., Pacific Palisades, Calif.

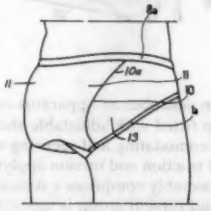
Filed July 21, 1971, Ser. No. 164,609
Int. Cl. A61f *11/02*
U.S. Cl. 128—152 2 Claims

An ear protector to reduce the effect of high intensity sound upon the human ear. The protector includes a band or other resilient means extending over, under, or around the head and provided with a soft resilient pod at each end. Each pod is formed of a soft resilient material and has an air cushion portion adapted to fit into and over the opening to the ear canal.

3,768,471
MEN'S BRIEFS, PARTICULARLY FOR SPORT

Charles Belpaume, Bouc-Bel-Air, France

Filed Dec. 20, 1971, Ser. No. 209,697
Claims priority, application France, Dec. 18, 1970, 7047153
Int. Cl. A61f *5/40*
U.S. Cl. 128—159 3 Claims

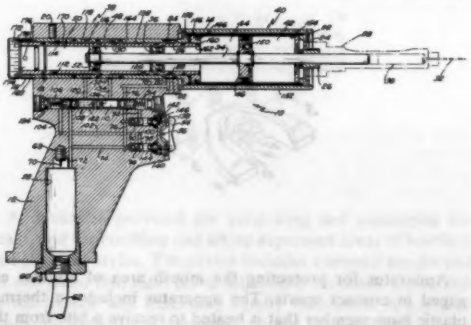


The leg bands of men's briefs curve inwardly to provide a concavity at the front part of the thigh so that the inguinal fold is left free and hence the leg band is not stretched when the leg is lifted and consequently there is no tension causing the rear portions of the leg band to ride up on the buttocks. Fullness is provided in the seat of the briefs by a curved seam which is concave outwardly so that the buttocks are always fully encased.

3,768,472
FLUID DISPENSING GUN

Milton Hodosh, 145 Whitmarsh St., Providence, R.I., and Carl Cometta, East Providence, R.I., assignors to said Hodosh, by said Cometta

Filed Feb. 7, 1972, Ser. No. 223,873
Int. Cl. A61m *5/00*
U.S. Cl. 128—218 P 4 Claims



Apparatus for slowly and uniformly injecting fluids, such as liquid anesthesia, into a human or animal body, comprising a

gun-shaped body having handle and barrel portions, a piston extending axially through the barrel portion, fluid pressure means for selectively extending or retracting the piston, and adjustable damping means associated with the piston to permit controlled movement thereof; whereby when a syringe having a compressible cartridge is operatively connection to the apparatus, extension of the piston causes compression of the cartridge to effect the desired controlled dispensing from the syringe.

3,768,473

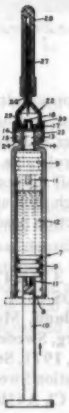
SYRINGE DIAPHRAGM WITH BALLOONING DOME

Walter A. Shields, 38-09 24th St., Jamaica, N.Y.

Filed Mar. 24, 1972, Ser. No. 237,962

Int. Cl. A61m *5/28; A61j 1/06*

U.S. Cl. 128—218 NV **7 Claims**



The filler opening of a hypodermic syringe barrel is closed by a diaphragm clamped to the mouth of the barrel by a closure cap carrying a hypodermic needle pointed at both ends with one end exterior and the opposite end interior of the closure cap and the shape and dimensions of the diaphragm causing the ready ballooning of the diaphragm by pressure in the barrel into the closure cap to be punctured by the hypodermic needle. The diaphragm comprises an annular flange clamped to the mouth of the barrel, a dome shaped portion and an annular wall connecting the flange and the dome shaped portion with the dome shaped portion extending in the closure cap out of contact with the closure cap and the interior point of the hypodermic needle. The end of the barrel opposite the filler opening is closed by a piston adapted to be pushed into the barrel to create internal pressure to balloon the dome shaped portion and annular wall and cause piercing of the dome shaped portion by the interior point of the needle.

3,768,474

HYPODERMIC SYRINGE BODY STRUCTURE

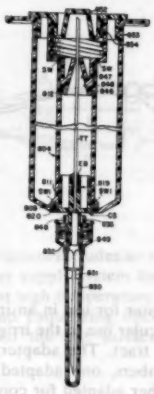
George K. Burke, and Kenneth Raines, both of, Bethlehem, Pa., assignor to Burron Medical Products, Inc., Bethlehem, Pa.

Filed Aug. 13, 1971, Ser. No. 171,624

Int. Cl. A61m *5/00, 5/04*

U.S. Cl. 128—220 **34 Claims**

A hypodermic syringe body structure including a plastic barrel open at one end and having an integral sleeve extending inwards from its other end, a separately formed plastic inner tubular member is arranged within the barrel and connected therewith so that at least a portion thereof is within the sleeve, one of the barrel and tubular member having an integral tubular extension projecting outwards of the other end of the barrel and which extension includes a frangible portion and a bore for receiving a cannula. One of the inner tubular member and the sleeve has a connector thereon for connection with the connector on the stopper of a liquid medicament con-



tainer, and a piercing spike for piercing the stopper is connected to one of said tubular member and said connector so that the syringe body structure can be connected with a liquid medicament container to constitute a complete hypodermic syringe with the tubular extension and associated cannula being broken off after a single use.

3,768,475

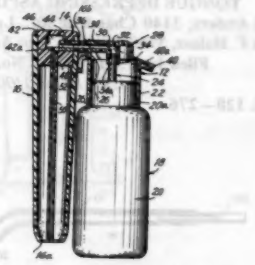
VAGINAL-ANAL APPLICATOR

Albert Osborne, 200 Melbourne Rd., Great Neck, N.Y.

Filed Jan. 12, 1972, Ser. No. 217,207

Int. Cl. A61m *3/00*

U.S. Cl. 128—225 **4 Claims**



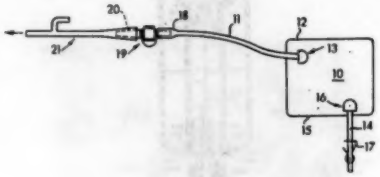
A vaginal-anal applicator for dispensing material from a pressurized container includes an actuator cap, a dispensing tube and an outer housing member for housing the dispensing tube. The dispensing tube and housing member are movable relative to the actuator cap from a first storage position to a second operating position. The actuator cap includes an actuator finger member which is depressed for releasing material from the pressurized container. The actuator cap further includes a member for limiting the depressed movement of the actuating finger member. The outer housing member includes an outwardly extending flange for limiting relative movement of the housing member and dispensing tube and for maintaining the same in the second operating position.

3,768,476

URINARY IRRIGATION AND DRAINAGE SYSTEM

Russell G. Raitto, Fitzwilliam, N.H., assignor to Concord Laboratories, Inc., Keene, N.H.

Filed Jan. 27, 1972, Ser. No. 221,330
Int. Cl. A61m *25/00*; F16l *47/00*
U.S. Cl. 128—275 15 Claims



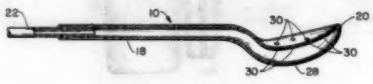
A connector adapter for use in an irrigation and drainage system having particular use in the irrigation and drainage of the human urinary tract. The adapter includes female and male coupling members, one adapted for connection to a catheter and the other adapted for connection to a drainage bag. The coupling portions of said members have internal sealing surfaces and are arranged so that, when coupled for drainage operation, the overall system is internally sterile and a fluid flow path is provided from the catheter to the drainage bag, the sealing surfaces thereof sealably abutting each other to form a continuous cylindrical opening having an uninterrupted internal surface through both coupling members. Further, the coupling members are linked by a flexible plastic strap so that, when decoupled for irrigation operation, the members remain linked to each other and the opening of the coupler member connected to the catheter is available for the reception of the tip of an irrigation syringe or to a fitting for connection to irrigation bottle source.

3,768,477

TONGUE DEPRESSING ASPIRATING TIP

Russell Anders, 3140 Chandelle Rd., Los Angeles, Calif., and Egon F. Halasz, 3963 Tracy St., Los Angeles, Calif.

Filed June 5, 1972, Ser. No. 260,004
Int. Cl. A61m *1/00*
U.S. Cl. 128—276 8 Claims



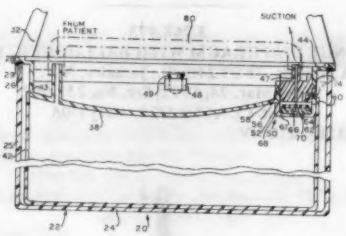
Herein described is a tongue depressing aspirating tip for use in dentistry which includes a handle which is substantially hollow and a substantially flat wide portion in some embodiments shown as being spoon-shaped which is also substantially hollow and communicates with the hollow portion of the handle. A tube extends from the end of the handle which is of a type which may be directly coupled into a tube leading from an aspirator. The wider tip portion has a plurality of apertures around the periphery of the bottom thereof which communicates into the hollow portion of the tip and handle. The top portion may include a plurality of apertures which communicates into the hollow portion of the tip and handle. In one embodiment the tip portion can be disposable by having it removable into a second portion.

3,768,478

ASPIRATION DEVICE FOR BODY FLUIDS

Ira J. Fertik, Queens, N.Y.; Charles M. Huck, Oldwick, and Charles R. Ashley, Somerville, both of N.J., assignors to Vermitron Medical Products, Inc., Carlstadt, N.J.

Filed Aug. 25, 1972, Ser. No. 283,885
Int. Cl. A61m *1/00*
U.S. Cl. 128—276 10 Claims



An aspiration device for withdrawing fluid from a patient's body comprises a closed container and tubular members opening into the container to define passages for suction and fluid respectively. A control valve assembly in the container at the suction passage cuts off suction when fluid saturates an expansible, porous pad which then applies a nonporous, resilient sealing member to the suction passage.

3,768,479

DISPOSABLE DIAPER

Leif Urban Roland Widlund, Molndal, Sweden, assignor to Molnlycke AB, Goteborg, Sweden

Filed Feb. 8, 1971, Ser. No. 113,240
Claims priority, application Sweden, Feb. 10, 1970, 1680/70
Int. Cl. A41b *13/02*
U.S. Cl. 128—287 7 Claims

The present invention relates to a disposable diaper having a soft, fluid absorbing body or pad to be placed between the baby's legs. The diaper is mainly characterized in that one of the ends of the absorbing body has a cross portion widening said end and intended to be placed on the front of the baby above the legs and being stable in form when either wet or dry. In addition, the diaper has a greater absorption capacity in the critical front part, thus avoiding leakage. There is a liquid impervious layer, possibly lined with e.g., a non-woven textile, so that the wet surface area of the diaper in contact with the baby's skin will be decreased.

3,768,480

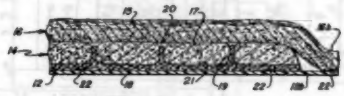
DISPOSABLE DIAPER

Frederick K. Mesek, Downers Grove, and Virginia L. Repke, Oak Forest, both of Ill., assignors to Johnson & Johnson, New Brunswich, N.J.

Filed June 7, 1972, Ser. No. 260,557
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 10 Claims

A disposable multi-layer diaper of high absorptive capacity and improved feel is provided which comprises as a first layer, to be brought into contact with an infant'skin, a porous,

fibrous, nonwoven bonded facing web of controlled wettability made of short cellulosic fibers and long fibers at a given overall concentration. The outer face of the facing layer is characterized by a blend of long and short fibers, with the concentration of long fibers being in excess of the overall concentration, while the inner face of the facing layer is also characterized by a blend of long and short fibers, with the concentration of short fibers being in excess of the overall concentration. The outer face of the facing layer has a sufficient amount of long fibers to give the diaper improved feel and wearing characteristics. The concentration of short cellulosic fibers gradually, and preferably substantially uniformly, increases



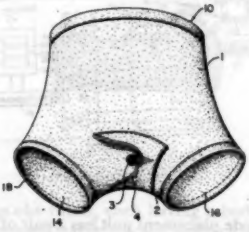
from the outer face to the inner face of the facing layer to provide a gradually increasing degree of wettability for preferentially drawing the urine away from the outer face, through the facing layer and into a second layer, in juxtaposition to the facing layer. The second layer is a highly porous, loosely compacted completely cellulosic batt having greater wettability than that of the facing web. A third layer, integral with the second, is a paper-like, densified, highly compacted layer of the same cellulosic material as the second layer but of substantially smaller average pore size and which is selectively thickened in certain areas. The final layer is an impervious backing sheet adhered to the densified layer over a widely distributed area of adhesion.

3,768,481

SANITARY PANTY OR THE LIKE

Masaji Shibata, 23, 30, Kamishima-cho, Kadoma City, Osaka, Japan

Filed Apr. 4, 1972, Ser. No. 241,002
Int. Cl. A61f *13/16*
U.S. Cl. 128—288 **7 Claims**



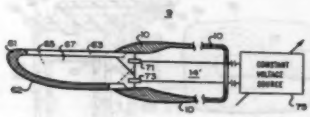
A sanitary panty-catamenial pad combination for use in absorbing human menstrual flow consists of a body garment having waist and leg openings and an aperture in the crotch area covered by a flap; the aperture receiving a suitable projection provided on the back of a catamenial pad to retain the pad in place.

3,768,482

SURGICAL CUTTING INSTRUMENT HAVING ELECTRICALLY HEATED CUTTING EDGE

Robert F. Shaw, 50 St. German Ave., San Francisco, Calif.

Filed Oct. 10, 1972, Ser. No. 295,879
Int. Cl. A61n *3/00*; A61b *17/38*, *17/32*
U.S. Cl. 128—303.1 **4 Claims**



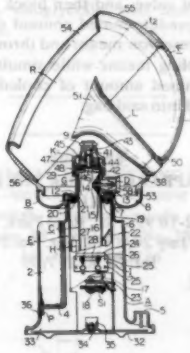
A surgical cutting instrument includes an electrically heated cutting edge and a power supply system for maintaining the cutting edge at a constant high temperature for sterilizing the blade, cutting tissue, and cauterizing the incised tissue to reduce hemorrhage from the cut surfaces of the tissues (hemostasis).

3,768,483

FACIAL SAUNA

Toshio Kusunoki, Hikone-shi, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Dec. 20, 1971, Ser. No. 209,715
Claims priority, application Japan, May 28, 1971, 46/37130
Int. Cl. A61b *33/00*
U.S. Cl. 128—368 **4 Claims**

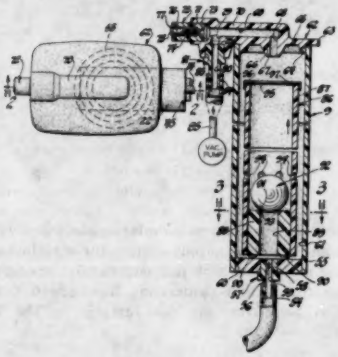


A facial sauna device for face treatment with hot steam and beauty liquid nutritious to skin, which comprising a nozzle of steam generating means, and a hood having an opening for receiving user's face and arranged to surround said nozzle, said hood being provided with spherical concave surface partly on its inner surface so that the steam sprayed out of the nozzle is reflected at said concave surface and thereby led toward the face receiving opening. The hood is detachably mounted to a suacer-shaped receptacle provided at upper part of the steam generating means, and includes a breathing duct of a horn shape detachably mounted to a duct receiving means provided in the hood and communicating the duct with external air. The hood preferably comprises a fixed hood member detachably mounted to the saucer-shaped receptacle and a movable hood member rotatably mounted to said fixed member.

3,768,484
GASTRIC COOLING APPARATUS

Andrew Gawura, Dearborn, Mich., assignor to A. Robert Lawrence, Oak Park, Mich.

Filed Oct. 6, 1972, Ser. No. 295,725
Int. Cl. A61f 7/00
U.S. Cl. 128—400 10 Claims

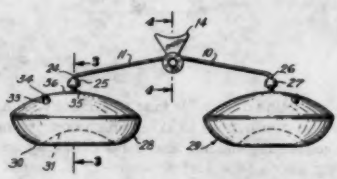


A gastric cooling apparatus which can be used for general cooling but which is especially adapted for local cooling, to reduce blood flow in the vessels supplying the stomach wall of a person. The gastric cooling apparatus includes a flexible, inflatable bag for insertion into a patient's stomach and to contain a predetermined amount of distilled water. A water cooling means, a vacuum operated reservoir means, and a directional flow control shunt valve are operatively interconnected, whereby when vacuum is applied to the reservoir means, said vacuum will operate the reservoir means to withdraw a first predetermined amount of water from said bag through said shunt valve, and then block off said vacuum to permit said first predetermined amount of water to flow by gravity from said reservoir means and through said shunt valve to said water cooling means while simultaneously forcing a second predetermined amount of cooled water out of said cooling means and into said bag.

3,768,485
TREATMENT APPARATUS FOR THE EYE AND ORBIT AREA

Richard Linick, 62-10 99th St., Rego Park, N.Y.

Filed July 20, 1972, Ser. No. 273,387
Int. Cl. A61f 7/00
U.S. Cl. 128—402 5 Claims

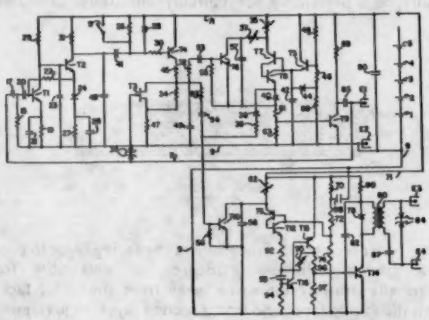


Apparatus for the symptomatic treatment of the eye and orbit areas comprising a frame carrying a pair of receptacles for liquid. A face of each receptacle is contoured to fit a different eye of the user, the frame being adjustable to enable the receptacles intimately to engage over the orbits and eyes of the user. The apparatus is prepared for use by filling the receptacles with a freezable fluid and subjecting the same to freezing temperatures to cause the fluid to solidify. In use, the frame is adjusted so that the receptacles are simultaneously positioned over the eyes of the wearer.

3,768,486
ATRIAL AND VENTRICULAR DEMAND PACER HAVING WIDE-RANGE ATRIAL ESCAPE INTERVAL

Barouh V. Berkovits, Newton Highlands, and Robert A. Guillette, Methuen, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Mar. 9, 1972, Ser. No. 233,135
Int. Cl. A61n 1/36
U.S. Cl. 128—419 P 5 Claims

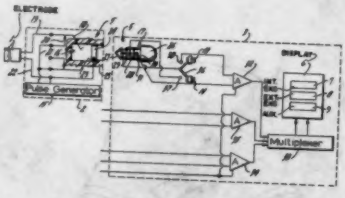


There is disclosed an atrial and ventricular demand pacer in which the atrial escape interval can be set to be less than 50 percent of the ventricular escape interval without multiple stimulations of the atria between ventricular beats. The atrial pulse generating circuit is triggered upon the occurrence of each ventricular beat, a single atrial stimulating pulse then being generated unless another ventricular beat is first detected within the atrial escape interval. Because an atrial stimulating pulse requires a trigger (ventricular beat), only one atrial stimulating pulse can be generated after each ventricular beat.

3,768,487
ELECTRODE PLACEMENT APPARATUS AND PACER

Frederick A. Rose, Fort Atkinson, Wis., assignor to Norland Corporation, Fort Atkinson, Wis.

Filed Mar. 22, 1972, Ser. No. 236,910
Int. Cl. A61n 1/36
U.S. Cl. 128—419 P 15 Claims

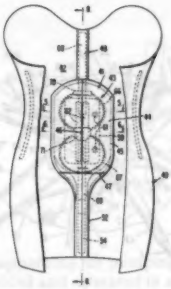


A heart electrode placement unit has a pair of displays, one for an intercardiac electrocardiogram and a second for an external sensed electrocardiogram. A pacing unit is releasably secured to the placement unit by a plug-in connector having a switch normally connecting a pulse source to electrode leads. The placement connector part is connected to a switch to connect the electrode directly to the input of the one display or reconnect the electrode leads to the pulse source. When the connector is open, the pacing switch automatically closes to reconnect the pulse source to the electrode leads.

3,768,488
FOUNDATION GARMENTS HAVING RESILIENT CONTROL UNITS

Henry M. Herbener, 803 N. Dawson St., Thomasville, Ga.

Division of Ser. No. 195,210, Nov. 3, 1971, Pat. No. 3,732,870.
This application Dec. 27, 1972, Ser. No. 318,705
Int. Cl. A41c 1/00
U.S. Cl. 128—533 7 Claims

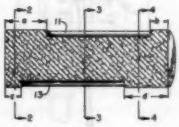


Foundation garments of the girdle, corselet, panty girdle and bikini types feature resilient abdominal control units and simplified pocket structures for such units, wherein the number of fabric layers is held to a minimum to reduce bulkiness. Each control unit is constructed to allow complete freedom of movement of the body so as to promote comfort while continuing to exert abdominal control and causing the garment to maintain a proper position on the body at all times. Improved means are provided to completely eliminate the possibility of the main vertical rib of the control unit from jabbing into the body during stooping or bending and the control unit possesses improved means coacting with the simplified pocket to center the unit laterally, to seat the unit properly in the pocket and to maintain the upper margin of the garment straight and taut for added neatness.

3,768,489
TOBACCO SMOKE FILTER

John E. Kiefer, Kingsport, Tenn., and Robert C. Mumpower, II, Bristol, Va., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 77,773, Oct. 5, 1970, abandoned. This application Aug. 9, 1971, Ser. No. 170,180
Int. Cl. A24d 5/50
U.S. Cl. 131—261 B 9 Claims



Tobacco smoke filters, each having a body formed from a permeable crimped textile tow and having a generally cylindrical form in order to be attached to the downstream end of a wrapped tobacco column in the formation of a filter cigarette. Each filter may have an overwrap or the wrapper of the tobacco column may be extended thereover to unite the same thereto. The filter body is provided with parallel lineal notched portions in the periphery thereof, the portions being located on opposite sides of the body. The notched portions may be located intermediate the ends of the body. Each may extend through one end portion of the same opposite the end through which the other may extend, may have a constant depth, or the depths thereof may be varied so that a constant slope is obtained. Plural parallel serated notched portions may be located at each of said opposite sides of the body and the notched portions may assume an angular array such that the angular displacement therebetween may be less than 180° at the downstream end thereof. Smoke passing through the filter will be affected by differences in pressure therein such that the flow pattern will be transverse as well as axial with respect thereto.

3,768,490
PERMANENTLY WAVING AND PERMANENTLY SETTING OF HAIR

Gregoire Kalopissis; Paul Roussopoulos, both of Paris, and Charles Zviak, Franconville, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

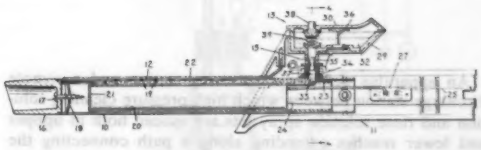
Continuation-in-part of Ser. No. 56,136, July 6, 1970, which is a continuation of Ser. No. 475,890, July 29, 1965, and a continuation-in-part of Ser. No. 14,757, Feb. 25, 1970, which is a continuation of Ser. No. 508,383, Nov. 17, 1965. This application Jan. 31, 1972, Ser. No. 222,299
Int. Cl. A45d 7/00
U.S. Cl. 132—7 8 Claims

Process for permanently waving hair and permanently setting hair which inclides the steps of subjecting hair on rollers and applying a self neutralizing composition containing in mixture a thiol selected from the group consisting of: thioglycerol, thioglycolic acid, dimercapto-adipic acid, dimercapto-1,4 butanediol-2,3 and thiolactic acid, and a disulfide, aid disulfide being dithiodiglycerol, or dithiodiglycolic acid only when the thiol is thioglycolic acid, and wherein the amount of thiol is preferably about 2 – 5 percent weight of the composition and wherein the numerical ratio of the disulfide groups to thiol groups is greater than 1,5, or greater than 2 when the thiol is thioglycolic acid and the disulfide is dithiodiglycolic acid.

3,768,491
IMPLEMENT FOR SETTING HAIR

George Barradas, Glenville, Ohio, assignor to Venus Electric Limited, Scarborough, Ontario, Canada

Filed Aug. 29, 1972, Ser. No. 284,642
Int. Cl. A45d 2/36
U.S. Cl. 132—36 R 7 Claims



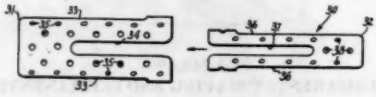
An hair treating implement comprises a pair of pivotally connected arms each comprising an operative section and a handle section. One arm section, which includes electric resistance heating means, provides an annular space containing an absorbent wick for receiving treatment liquid from a reservoir mounted in the handle section of the other arm, the flow of liquid being regulated by a manually operable push button valve. Said one arm section is perforated to allow the discharge of vaporized liquid.

3,768,492

MULTIPLE SLOTTED HAIR STYLING AND PERMANENT WAVE ROLLERS

Mamie V. Scott, P.O. Box 328, Cumberland, Md.

Filed Dec. 6, 1971, Ser. No. 205,037
Int. Cl. A45d 2/02
U.S. Cl. 132—39 1 Claim



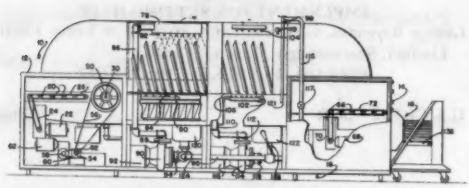
Generally cylindrical hair rollers having multiple slots extending therein from one or both ends are provided in several sizes to permit them to be interfitted with hair rolled thereon. The roller enables the hair to be curled more on the ends of the hair and to be straight or slightly wavy near the scalp. The multiple slotted rollers facilitate the drying of the hair by permitting the passage of drying air through the slots and through perforations in the roller. The smaller roller can be inserted into the larger roller from either end to position the hair extending from the smaller roller through one of the slots in the larger roller.

3,768,493

AUTOMATIC FOOD TRAY CLEANING MACHINE

Robert W. Kraeft, 10581 East Dorado Ave., Englewood, Colo.

Filed Apr. 5, 1971, Ser. No. 131,301
Int. Cl. B08b 3/02
U.S. Cl. 134—46 9 Claims



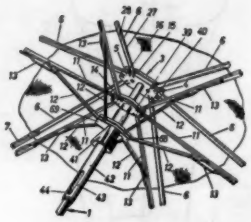
An apparatus defining a receiving station and a remote discharge station between which high pressure cleaning solution and rinse solution spray jets are spaced both in uppper and lower reaches extending along a path connecting the receiving and discharge stations. The apparatus includes a conveyor extending between the two stations with its inlet end at the receiving station and its outlet end at the discharge station. The conveyor includes structure for (1) engaging horizontally disposed trays sequentially advanced horizontally toward the receiving station, (2) swinging the trays to front-to-rear inclined positions, (3) conveying the inclined trays to the discharge station along a path disposed between the upper and lower reaches in which the spray jets are disposed, and (4) then swinging the trays to inverted horizontal positions from which they are automatically released for horizontal movement from the discharge station.

3,768,494

UMBRELLA

Heinz Weber, Hilden, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada

Filed July 21, 1971, Ser. No. 164,764
Claims priority, application Germany, July 22, 1970, P 20 36 255.4
Int. Cl. A45b 11/00, 19/04, 19/10
U.S. Cl. 135—20 R 4 Claims



An umbrella crown or runner to which the dome ribs or stretcher structure is hinged, wherein the dome ribs or stretcher members haveat least two hinge extensions and the crown or runner has pairs of parallel slots adapted to receive the hinge extensions of the dome ribs or runners, respectively.

3,768,495

CRUTCH WITH ADJUSTABLE HANDGRIP

Alfred A. Smith, 8277 Lankershim Blvd., North Hollywood, Calif.

Filed June 11, 1971, Ser. No. 152,166
Int. Cl. A61h 3/02
U.S. Cl. 135—51 8 Claims

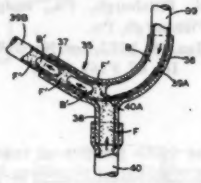
The metal tubular shaft of a single-shaft crutch is locally reinforced by a slidable sleeve of substantial length that embraces the shaft and the sleeve carries a laterally extending handgrip. The sleeve is adjustable along the shaft to vary the distance of the handgrip from the upper end of the shaft. The length of the sleeve is not less than the distance from the axis of the shaft to the center of the applied load on the handgrip and therefore the lateral force transmitted to the shaft at each of the two ends of the sleeve is not more than the applied load.

3,768,496

TWO-PHASE BLOOD PUMP

Brian A. Hills, Bembridge, Isle of Wight, England; George Fried, Stamford, Conn., and Helmuth A. Langner, New York, N.Y., assignors to Brian A. Hills, Bembridge, Isle of Wight, England

Filed Apr. 27, 1972, Ser. No. 248,055
Int. Cl. A61m *1/00*
U.S. Cl. 137—1 10 Claims



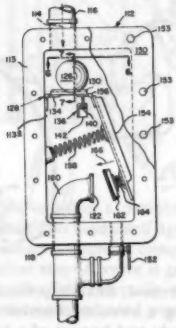
A method and apparatus for pumping blood wherein pump elements are provided and operated in a manner to avoid injury to blood constituents. Such apparatus operates with respect to a two-phase combination of blood and an inert liquid which is immiscible with blood, wherein successive slugs of blood are encapsulated in the insert liquid, the encapsulated slugs of blood being separated from each other by predetermined amounts of the inert liquid. The major portion of the apparatus passes only inert liquid, whlie the two-phase combination of inert liquid and blood passes through valve means in the apparatus in a manner to avoid mechanical damage to the blood.

3,768,497

EMERGENCY GAS SHUT-OFF VALVE

William Lynn Mueller, 429 Dellbrook Ave., San Francisco, Calif.

Filed Aug. 23, 1971, Ser. No. 174,076
Int. Cl. F16k *17/36*
U.S. Cl. 137—38 5 Claims



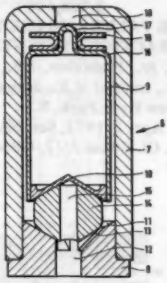
An emergency gas shut-off valve for interrupting the flow of gas from a main gas line to a feeder line upon imposition of a severe shock, such as a seismic disturbance. The device includes a housing with which the gas lines are in fluid communication. A relatively heavy ball is maintained in position on a platform within the housing, and its tendency to be dislodged may be adjusted by changing the horizontal position of the platform so that the ball is caused to be displaced from its rest position to shut-off position if the entire device is jarred horizontally. The ball, when in shut-off position, overlays, or causes another member to overlay, one of the gas lines, so that gas flow is interrupted.

3,768,498

FUEL TANK VENTILATING SYSTEM

Norbert Urban, Bienrode, Germany, assignor to Volkswagonwerk Aktiengesellschaft, Wolfsburg, West Germany

Filed Sept. 2, 1971, Ser. No. 177,303
Claims priority, application Germany, Sept. 15, 1970, P 20 45 458.4
Int. Cl. F16k *45/00*
U.S. Cl. 137—43 3 Claims



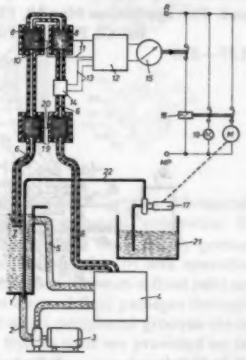
A system for ventilating a fuel tank. The apparatus includes a number of ventilating lines connected at different points to the upper surface of the fuel tank and a ventilating valve, arranged in at least one of the lines, for inhibiting the passage of fuel through the line and permitting the passage of gases. The ventilating lines are preferably connected together and to a main ventilating line which terminates in a filter. The ventilating valve or valves prevent fuel from reaching and contaminating the filter.

3,768,499

ARRANGEMENT FOR THE SETTING OF THE ACID OR ALKALI CONCENTRATION FOR CHEMICAL BATHS HAVING HIGH ACIDITY OR ALKALINITY

Willy Dziomba; Rainer Beule, both of Wolfsburg; Gunter Dreyer, Kl. Sissbeck, and Gerhard Wolf, Wolfsburg, all of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed June 18, 1971, Ser. No. 154,351
Claims priority, application Germany, July 3, 1970, P 20 32 991.3
Int. Cl. G05d *11/08*
U.S. Cl. 137—93 9 Claims



A system for the controlling of the acidity or alkalinity concentration of a bath of chemical solutions having high acidity or alkalinity, the system including a pair of measuring elec-

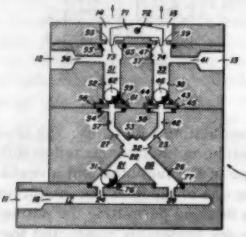
trodes which enclose therebetween a measuring path, and a dosing arrangement for dosing additional chemical constituent to the bath, when necessary, to keep the acidity and alkalinity at predetermined values, said electrodes being placed from each other in a predetermined distance, such distance defining a measuring path or element the resistance region of which lies within the sensitivity region of the measuring circuit.

3,768,500

SELECTOR VALVE AND USE THEREOF IN A FRACTIONATION SYSTEM

George C. Kauer, Jr., Plainview, L.I., and Louis E. Brooks, Great Neck, L.I., both of N.Y., assignors to Air Techniques Incorporated, New Hyde Park, N.Y.

Filed Apr. 1, 1971, Ser. No. 130,271
Int. Cl. G06m *1/12*; G05d *11/02*
U.S. Cl. 137—119 5 Claims



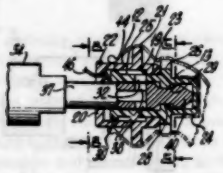
A five ported selector valve having an inlet, two outlet and two vent ports in which a ball is moved therein to alternately place the inlet port in fluid flow communication with each of the outlet ports in response to stopping and restarting of fluid flow through the inlet port. The outlet port not connected to the inlet port is in fluid flow communication with its respective vent port. The valve is particularly suited for reversing flow in a dual tower adsorption system. A three ported valve in which fluid is alternately directed from an inlet port to one of two outlet ports is also disclosed.

3,768,501

INFLATABLE ARTICLE VALVE

Edward E. Elson, Anaheim, and Bert Lane, Palm Springs, both of Calif., assignors to Automatic Helium Balloon Systems, Inc., Beverly Hills, Calif.

Continuation-in-part of Ser. No. 825,690, May 19, 1969, abandoned. This application May 10, 1971, Ser. No. 141,711
Int. Cl. F16k *15/20*
U.S. Cl. 137—231 13 Claims



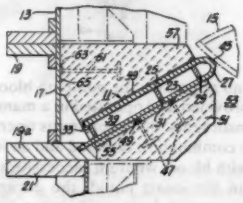
A valve including an open-ended tubular body member having inwardly directed end flanges and an outwardly directed intermediate flange sealably engaging an article with which the valve is used. A front closed tubular slide member has an outer peripheral lip between the body member end flanges and is slideably engaged within the body member. At least one port is placed within the slide member intermediate its ends. A deformable peripheral lip is provided on the inner face of the slide member and adapted to be releasably engageable by a tool to permit opening and closure of the valve upon axial displacement of the slide member within the body member. The valve is especially suitable for use with inflatable articles such as balloons.

3,768,502

HOT BLAST VALVE SEAT

Russell A. Powell, Pittsburgh, Pa., assignor to Kappers Company Inc., Pittsburgh, Pa.

Filed Jan. 19, 1972, Ser. No. 219,082
Int. Cl. F16k *49/00*
U.S. Cl. 137—340 7 Claims



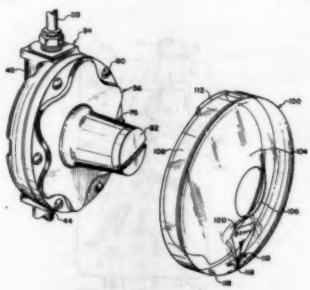
A frusto-conical, water-cooled valve seat is welded to the bottom flange of a spool piece, adapted to be inserted into a pipeline, and it is shaped to coact with the lower surface of a mushroom valve.

3,768,503

REGULATOR ATMOSPHERIC PRESSURE PROTECTOR

Evans R. Billington, Glenview, Ill., assignor to Golconda Corporation, Chicago, Ill.

Filed Oct. 24, 1972, Ser. No. 300,219
Int. Cl. F16k *27/12*
U.S. Cl. 137—377 7 Claims



A snap-on, year around, flexible protector marginally enclosing and providing a circular chamber of air around the joint between the body and bonnet of a liquefied petroleum gas pressure regulator that prevents freezing rain, sleet, or highway splash from closing an atmospheric vent opening to the bonnet that is located in the joint.

3,768,504

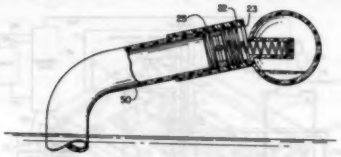
CHECK VALVE FOR USE WITH A SNORKEL TYPE BREATHING TUBE

Samuel B. Rentsch, Jr., 242 Hubbard St., Glastonbury, Conn.

Filed June 19, 1972, Ser. No. 264,206
Int. Cl. F16k *15/04*
U.S. Cl. 137—409 13 Claims

A check valve for use with a snorkel-type breathing tube comprising an annular member which is joined to the free end

of a breathing tube and which defines a chamber which is sealed against the ingress of water when submerged by a spherical ball element. The ball is weighted so as to be neutrally buoyant when submerged in water and is joined to



the annular member by a spring which exerts a light biasing force on the ball causing it to sealingly engage a valve seat defined at one end of the annular member. The weight of the ball causes it to unseat when no longer submerged thereby opening the valve to the passage of air.

3,768,505

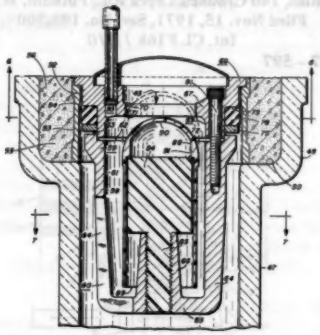
DRAIN CHECK VALVE AND MOUNTING MEANS

Balazs Kiss Benke, Parma, Ohio, assignor to BKB Company, Parma, Ohio

Continuation-in-part of Ser. No. 2,734, Jan. 20, 1970, abandoned. This application Apr. 28, 1971, Ser. No. 138,098

Int. Cl. E03g *1/00*; F16k *31/18*

U.S. Cl. 137—433 **7 Claims**



A drain check valve using a peripheral mounting gasket compressionally loaded to bind itself against the interior of a pipe, with the maximum amount of compressive loading being fixed by a mechanical stop. A valve is guided in the unit by a guide post engaging the float internally away from liquid flow. A vent is available to communicated gases to atmosphere.

3,768,506

HIGH/LOW FLOW SAFETY VALVE

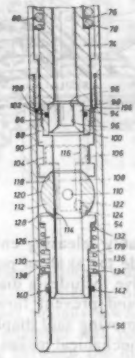
Howard L. McGill, Houston, Tex., assignor to Sohlumberger Technology Corporation, New York, N.Y.

Filed June 21, 1971, Ser. No. 155,118

Int. Cl. F16k *17/64*

U.S. Cl. 137—458 **21 Claims**

A high/low flow safety valve according to the present invention relates to a valve construction that may be employed in conjunction with flow conduits such as well production tubing and the like. The valve construction is operative to allow the flow of production fluid through the valve structure as long as the volume of flowing pressurized fluid is within an operating range defined by low and high volume limits. As long as fluid flow and consequent pressure differentials are within the volume limits defining the operating range, a ball type safety valve will remain open allowing the flow of production fluid through. In the event the flow of production fluid should reduce below a predetermined minimum operating level, a low flow actuating means will achieve closing of the ball valve and locking means will effectively lock the valve structure



against inadvertent reopening. In the event the velocity of flowing fluid should increase above a predetermined maximum a high flow actuating means will become operative and will force a ball valve to its closed position and lock it against inadvertent reopening. The safety valve structure also includes means for unlocking and reopening the safety valve mechanism for the purpose of resuming production flow through the conduit structure with which the safety valve mechanism is associated.

3,768,507

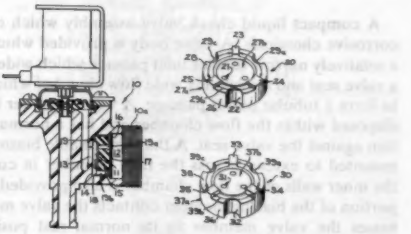
FLOW CONTROL DEVICE

John A. Dicken, Jr., Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed July 2, 1971, Ser. No. 159,238

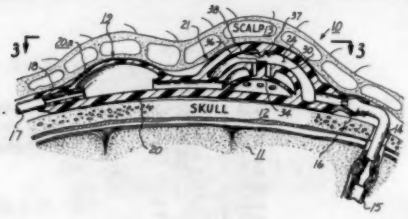
Int. Cl. F15d *1/08*

U.S. Cl. 137—504 **8 Claims**



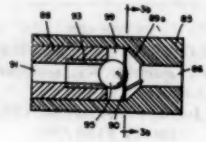
A fluid flow control device maintains substantially vibration-free and substantially constant volumetric fluid flow through a fluid passage despite fluid supply pressure variations. The device is a resilient plate or disk operable in combination with a seat disposed between a fluid inlet and outlet. The resilient plate has internal fluid passages through its body thickness and spaced-apart peripheral grooves serving as external fluid passages. Bypass pads are provided on the face of the plate disposed toward the seat whereby fluid flow paths are established therebetween. The bypass pads are disposed non-symmetrically on the plate face such that deflection of the plate and/or compression of the pads is non-uniform. The closing of external routes for fluid passage around the plate therefore occurs sequentially rather than simultaneously.

3,768,508
VALVE FOR CONTROLLABLE RELEASE OF ENTRAPPED BODY FLUIDS
Rudolf R. Schulte, 5377 Overpass Rd., Santa Barbara, Calif.
Filed Jan. 24, 1972, Ser. No. 220,248
Int. Cl. F16k *15/14*; A61m *27/00*
U.S. Cl. 137—522 **17 Claims**



A valve for controllably releasing entrapped body fluids, such as fluid from inside the skull of persons suffering from hydrocephalus. The valve includes a diaphragm which tends to close a valve seat and prevent flow of such fluid, and mechanical means for moving said diaphragm so as to open the valve to flow. The mechanical means may comprise a projection on the diaphragm which is contactible by a flexible portion of the body of the valve.

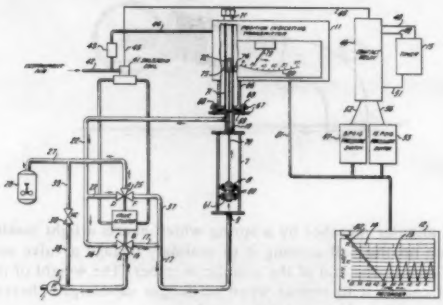
3,768,509
LIQUID CHECK VALVE ASSEMBLY
George G. Goda, 390 1st Ave., New York, N.Y.
Filed June 14, 1971, Ser. No. 152,635
Int. Cl. F16k *15/04*
U.S. Cl. 137—539 **8 Claims**



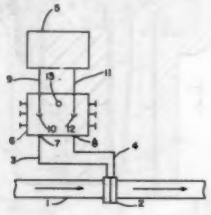
A compact liquid check valve assembly which can handle corrosive chemicals. A valve body is provided which includes a relatively narrow tubular inlet passage which widens to form a valve seat and a relatively wide flow chamber which narrows to form a tubular outlet passage. A valve member is movably disposed within the flow chamber and has a normal rest position against the valve seat. A thin deformable biasing member mounted to extend across the flow chamber in contact with the inner walls of the flow chamber is also provided. A central portion of the biasing member contacts the valve member and biases the valve member to its normal rest position. In a preferred embodiment of the invention the biasing member is a portion of a circular disc and is formed of a polyfluorocarbon material.

3,768,510
METHOD AND APPARATUS FOR FLOW RATE CALIBRATION
E. T. Reves, Odessa, Tex., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed June 23, 1971, Ser. No. 155,918
Int. Cl. G01f *3/14, 3/16*
U.S. Cl. 137—551 **7 Claims**

A flow rate calibration apparatus and method therefor is designed to accurately calibrate the flow rate of very small streams that are difficult and potentially dangerous to handle. The apparatus comprises a hollow cylinder, a piston, valve means, conduit means interconnecting the foregoing elements, timing means for controlling the time interval the valve means remains in a calibrating position, alternating means for alternating between the calibrating position and a zeroing position of the valve means, and indicating means for indicating the relative position of the piston within the cylinder at a given instant of time. A transmitting means is preferably provided on the apparatus for translating the time interval and the reciprocal movement of the piston into units of volume displaced from the cylinder per time interval.



3,768,511
CONTROL DEVICE
Sydney C. Bias, 140 Crooked Creek Rd., Putnam, W. Va.
Filed Nov. 15, 1971, Ser. No. 198,700
Int. Cl. F16k *11/10*
U.S. Cl. 137—597 **11 Claims**

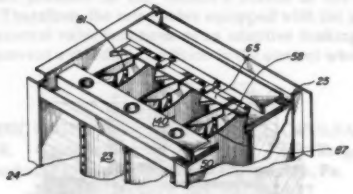


A control device has been designed for combination with a process orifice and a pressure differential measuring instrument device. This device, which is inexpensive and easy to replace, combines the advantage of protecting the instrument device and also facilitates the clearing of process material from orifice leads when an unbalanced condition occurs in the process. This control device, sometimes referred to as an instrument manifold, consists of a housing containing a series of passages and valves and which uniquely adapts instrument operating fluid to the purpose for which the control device was designed.

3,768,512
DAMPER VALVE
Paul G. Lahaye, 620 Shore Rd., Cape Elizabeth, Maine
Filed Dec. 6, 1971, Ser. No. 205,216
Int. Cl. F23l *13/00*
U.S. Cl. 137—601 **15 Claims**

A damper valve for positively closing gas flow in one position and minimizing resistance to gas flow in other positions. A

plurality of streamline members are positioned in a fluid passageway in operative relationship to each other. The streamline members are expanded to change their outer configuration when it is desired to restrict gas flow in the passageway. Structural means within each streamline member act to expand the skin of each member into abutting contact with an adjacent member or passageway side to close the

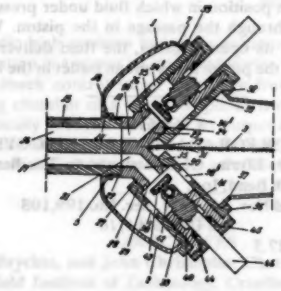


passageway to gas flow even under extremely high temperatures of operation and large temperature gradients. The seal formed is capable of adapting to differential thermal expansion since it is formed by at least one flexible member. The elastic deforming of the metal skin provides good sealing in the closed position with minimum leakage and minimizes pressure drop due to turbulence in open positions.

3,768,513
WATER TAP

Carlos Sauret-Ponsa, 7 & 9, Calle Pelayo, Barcelona, Spain

Division of Ser. No. 524, Jan. 5, 1970, Pat. No. 3,686,733. This application Aug. 7, 1972, Ser. No. 278,649
Int. Cl. F16k *19/00*
U.S. Cl. 137—606 **5 Claims**



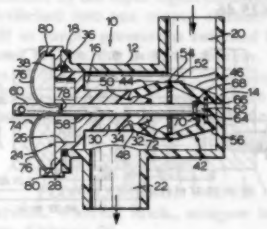
A tap has two mirror symmetrically shaped shell sections connected to each other to form an internal cavity having only inlet, outlet and two lateral openings. A fluid supply member having two ducts, which communicate with said cavity, seals the inlet cavity. Means, portions of which have cross sections smaller than said lateral openings, pass through the latter and regulate the quantity of fuel which may flow from said ducts into the cavity prior to being discharged through said outlet opening.

3,768,514
VALVE STRUCTURE

Kazuhiro Goto, London, Ontario, Canada, assignor to GSW Appliances Limited, Weston, Ontario, Canada

Continuation-in-part of Ser. No. 91,878, Nov. 23, 1970. This application June 23, 1972, Ser. No. 265,430
Int. Cl. F16k *11/14*
U.S. Cl. 137—609 **25 Claims**

A valve comprising a cylindrical valve chamber, having an inlet leading into said chamber, and at least one outlet leading from said chamber and out of axial alignment with said inlet to provide a cylindrical chamber wall portion therebetween. Disposed coaxially within the chamber is at least one accordian-like resilient valve member adapted on longitudinal contraction to fold and expand radially outwardly into engage-

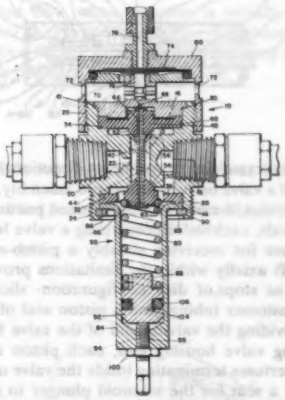


ment with the cylindrical chamber wall portion to effect a seal between the inlet and the outlet and on longitudinal expansion to unfold and contract radially inwardly out of engagement with the cylindrical chamber wall portion to provide a flow passage therearound between the inlet and the outlet, and means are provided for operating the valve member.

3,768,515
PNEUMATIC RELAY VALVE FOR FILLING APPARATUS

William H. Trusselle, Braintree, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.

Continuation-in-part of Ser. No. 186,031, Oct. 4, 1971. This application Feb. 9, 1972, Ser. No. 224,872
Int. Cl. F16k *31/385*
U.S. Cl. 137—625.6 **4 Claims**

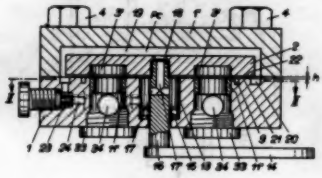


A pressure operable valve in which a valve element is supported by diaphragms for movement relative to valve seats, wherein the diaphragms are designed to bias the valve element to a closed position, a coil spring is disposed with an end engaged with one of the diaphragms to supplement said biasing, and a part supported against the other end of the spring is operable to vary the pressure applied to the valve element by said spring.

3,768,516
ROTARY CONTROL VALVE

Ivan Jaroslav Cyphelly, Forchstrasse 968, Hinteregg, Switzerland

Filed Jan. 22, 1973, Ser. No. 325,246
Claims priority, application Switzerland, Jan. 25, 1972, 1088/72
Int. Cl. F16k *39/00, 11/00*
U.S. Cl. 137—625.46 8 Claims

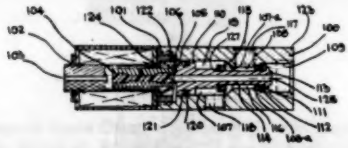


A rotary control valve for a hydraulic system has a valve body formed with intake and discharge openings which may be connected by aligning recesses in respective opposite sealing faces of the valve body and of a distributor disc mounted on the body for angular movement about an axis. Limited axial movement of the disc permits a narrow gap to be maintained between annular portions of the two faces offset from the recesses in a radially outward direction because a chamber partly bounded by a face of the distributor member directed away from the aforementioned face of the valve body and communicating with the gap is vented through a throttled conduit. Contaminants in the gap may be flushed out by manually opening a valve providing a bypass around the throttle in the venting conduit.

3,768,517
SOLENOID OPERATED SIMPLE CONTROL VALVES

Richard S. Pauliukonis, 6660 Greenbriar Dr., Cleveland, Ohio

Filed Sept. 20, 1971, Ser. No. 181,874
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.65 8 Claims

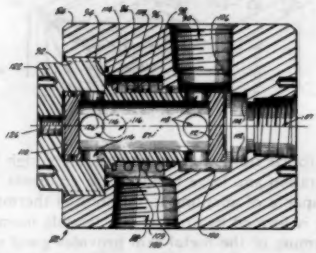


Solenoid operated simple springless directional valves, each comprised of a valve body, a piston-rod assembly, and a 3-way solenoid operator, for use with pressurized pneumatic, and/or hydraulic fluids, each valve comprising a valve body with appropriate bore for receiving slidably a piston-rod assembly made to shift axially within the limitations provided by rod seals,acting as stops,of disk configuration- sliced from appropriate elastomer tubing- and a piston seal of O-ring configuration dividing the valving end of the valve housing from the operating valve housing end, each piston rod with appropriate apertures terminating inside the valve operating end section with a seat for the solenoid plunger to seal off fluid communication between valving and operating ends, each solenoid operator permanently secured therein thereby controlling valve operation in that the piston-rod assembly shifts from its original position to another position as a result of larger end force from fluid pressure acting over the larger diameter piston end when said solenoid plunger unseals said fluid communication apertures shutting off solenoid exhaust, and by returning the piston rod assembly to the original position when the solenoid is deenergized and the plunger shuts off the apertures in the piston end while exhausting via now open solenoid exhaust port.

3,768,518
FLUID TRANSFER VALVE

Verlon C. Roth, 2279 Trinway, Simi Valley, and Arden J. Roth, 2279 Trinway Ave., Simi, both of Calif.

Filed Mar. 1, 1971, Ser. No. 119,464
Int. Cl. F16k *11/07, 31/383*
U.S. Cl. 137—625.66 9 Claims

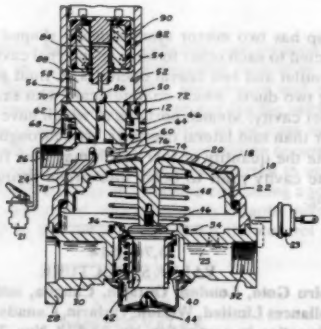


A fluid transfer valve has a housing with a hollow interior, and a tubular piston with a passage through it movably disposed within the hollow interior. The piston is normally maintained in a closed position sealed to the interior of the housing to prevent fluid communication between an inlet in the housing and the passage through the piston. The piston slides to an open position in which fluid under pressure flows from the inlet through the passage in the piston. When the piston moves to its open position, the fluid delivered to the passage through the piston flows out an outlet in the housing.

3,768,519
MODULATOR FOR ADAPTIVE BRAKING SYSTEM

Robert J. Morse, Elyria, Ohio, assignor to The Bendix Corporation, South Bend, Ind.

Filed Nov. 16, 1971, Ser. No. 199,108
Int. Cl. B60t *8/10*
U.S. Cl. 137—627.5 9 Claims



An adaptive braking control valve is mounted in the primary chamber of a standard relay valve used to control brake ac-

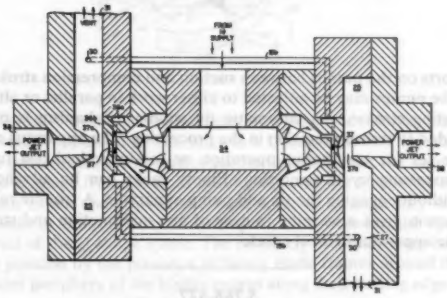
tuation in a vehicle equipped with air-actuated brakes. The adaptive braking control valve responds to an output signal from a logic controller to permit the air pressure in the primary chamber of the relay valve to decay when an incipient skidding condition is sensed at the control wheel, and subsequently permits the pressure level in the primary chamber to increase at a controlled rate. The relay valve responds to pressure changes in the primary chamber to control communication of air pressure to the vehicle's brakes in the normal manner. Therefore, the relay valve equipped with the adaptive braking control valve functions as an adaptive braking modulator to prevent a skidding condition in the control wheel.

3,768,520

FLUIDIC HIGH PRESSURE HYDRAULIC PULSATOR

Fabio R. Goldschmied, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 6, 1972, Ser. No. 241,617
Int. Cl. F15c *1/16*
U.S. Cl. 137—809 3 Claims



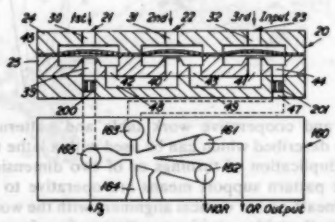
A fluidic high pressure hydraulic pulsator including vortex amplification in a power jet stage and vortex shear modulation in a feedback control stage. Discharge from the supply-jet-receiving chamber of a vortex amplifier is made to alternate automatically between its power jet output orifice and a vortex release chamber utilized for vortex shear modulation of the tangentially introduced control jet of such amplifier.

3,768,521

LOGIC GATES

Ondrej Brychta, and John Christopher Charnley, both of The Cranfield Institute of Technology, Cranfield, Bedfordshire, England

Filed May 26, 1971, Ser. No. 148,252
Claims priority, application Great Britain, May 26, 1970, 25,191/70; Nov. 13, 1970, 54,204/70
Int. Cl. F15c *3/04*
U.S. Cl. 137—832 20 Claims



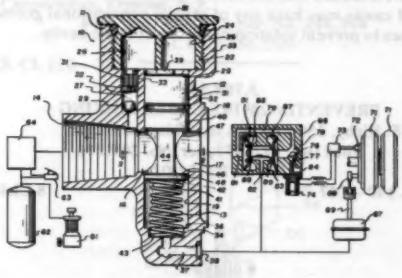
The invention relates to the provision of a double function fluid logic gate, that is, a gate providing two output signal simultaneously, one a high-level P_o signal and the other a low-level or $\overline{P}$ signal. The gate employs a plurality of SPDE (single path diaphragm element) units as the input stage of the gate, and a DPDE (double path diaphragm element) unit together with with an ejector system or wall attachment effect system, as the output stage. The output stage comprises two output channels; and the DPDE acts to switch an air stream of the air supply to or from an output channel so that when the logic of the gate is satisfied by the input signal condition, air at supply pressure is switched into one output channel to give the P_o signal and air at supply pressure is switched from the other output channel to give the $\overline{P}$ signal therein. There are two modifications of the invention not employing SPDE units, namely, a flip-flop and a memory gate but both employ output systems as above described to provide the P_o and $\overline{P}$ signals.

3,768,522

FLOW CONTROL VALVE

Romas Leparskas, Warren, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed June 2, 1972, Ser. No. 258,954
Int. Cl. F15d *1/10*
U.S. Cl. 138—40 2 Claims



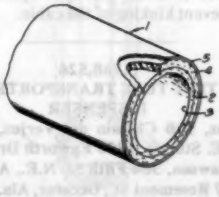
A flow control valve employs a shiftable spool movable between free flow and restricted flow positions. A frictional dampening force is applied to the spool in the restricted flow position to retard spool oscillation. The valve permits relatively unrestricted flow when pressure is initially applied and thereafter may shift to throttle further flow through the valve. One application for the valve is to prevent sharp pressure rises in a cyclically operated pneumatic system.

3,768,523

DUCTING

Clifford A. Schroeder, 5826 Farralane Ave., Woodland Hills, Calif.

Filed June 9, 1971, Ser. No. 151,303
Int. Cl. F16l *9/14*
U.S. Cl. 138—141 5 Claims

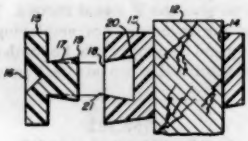


Ducting is disclosed having an inner composite of fine fibrous insulating material and a composite of textile fibrous material secured about the inner composite. A fluid-impermeable sleeve may be positioned about the composite of textile fibers.

3,768,524
LOOM PICKER

Richard J. Jacob, Dayton, Ohio, assignor to Dayco Corporation, Dayton, Ohio

Filed Oct. 10, 1972, Ser. No. 296,416The portion of the term of this patent subsequent to Oct. 17, 1989, has been disclaimed.
Int. Cl. D03d *49/36*
U.S. Cl. 139—159 **9 Claims**

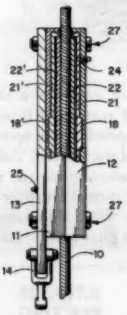


A loom picker which has a body of resilient elastomeric material with a shuttle-contacting insert of a wear-resistant material which is harder than the body. The inner end of the insert has an outwardly tapered configuration and is mounted in a cavity which is similarly tapered so that the tapered end of the insert is locked into the cavity. The cross section of the insert and cavity may have any of several conventional geometric shapes to prevent rotation of the insert in the cavity.

3,768,525
PREVENTING WIRE CABLE KINKING

Russell F. Kirby, 259 Center Ave., Abington, Mass.

Filed Dec. 17, 1971, Ser. No. 209,216
Int. Cl. B21f *1/02*
U.S. Cl. 140—147 **8 Claims**



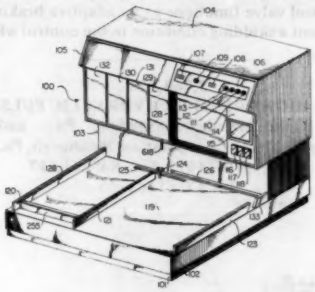
A cable to be straightened passes through a rotatably supported split cylinder formed with spiral grooves for mating relationship with the cable. The rotatable cylinder resides within a bearing block that resides in a support block. By pressing opposed support blocks together, pressure may be applied to the cable for straightening it as it translates through the split cylinder to cause the split cylinder to rotate and thereby help prevent kinking of the cable.

3,768,526
AUTOMATIC TEST TUBE TRANSPORTER AND SAMPLE DISPENSER

Manuel C. Sanz, 50B Chemin des Verjus, Geneva, Switzerland; Byron E. Sturgis, 1806 Epworth Dr., Hunstville, Ala.; Charles V. Lawson, 304 Fifth St. N.E., Arab, Ala., and Joe K. Bain, 2307 Rosemont St., Decatur, Ala.

Filed Mar. 22, 1971, Ser. No. 126,782
Claims priority, application Canada, Apr. 3, 1970, 79,112
Int. Cl. B65b *43/56*
U.S. Cl. 141—130 **49 Claims**

An automatically operated transporter apparatus which advances racks containing double rows of test tubes under a vertically movable aspirating and dispensing tip and tilts the tubes successively to a reference position allowing the tip to descend and engage the inner side wall of the tubes to perform its function. The tip is operationally in communication with a double pump metering and dispensing apparatus which includes a linearly adjustable eccentric mechanism which drives the pump pistons with a motion of adjustable sinusoidal amplitude. The apparatus also includes a pump valve switching mechanism which automatically switches the valves and the

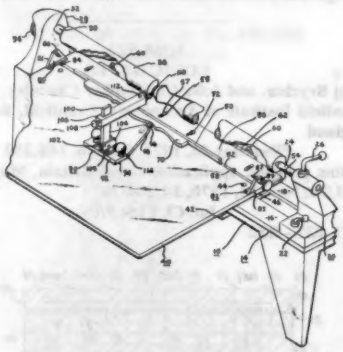


ports on the pumps between suction and compression strokes. The pumps may be adjusted to either work in parallel or alternating strokes. An automatic tip wiping mechanism is provided to insure precision in the processing. The apparatus can be set for continuous operation or for individual test tube processing cycle operation. Empty racks can be advanced without engaging the tip and pump apparatus. A trouble relay system gives a warning in case of any malfunction and stops the apparatus in most cases.

3,768,527
LATHE IMPROVEMENTS

Richard A. Messick, 2661 Andover Ave., Fullerton, Calif.

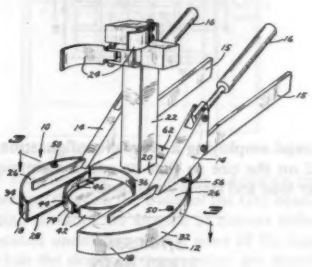
Filed Feb. 7, 1972, Ser. No. 223,915
Int. Cl. B23b *3/28*
U.S. Cl. 142—38 **12 Claims**



A tool and cooperative work table and pattern support means are described which can be used with a lathe to permit accurate duplication of turnings or of two dimensional patterns. The pattern support means are operative to secure a pattern beneath and in vertical alignment with the work center of the lathe; the table provides an offset surface for support of the tool; and the tool has a base plate with a first arm that supports a pattern follower and a second arm which supports the cutting tool above and in vertical alignment therewith. The height of the second arm is preferably adjustable to permit its adjustment to the work center of different lathes. The tool

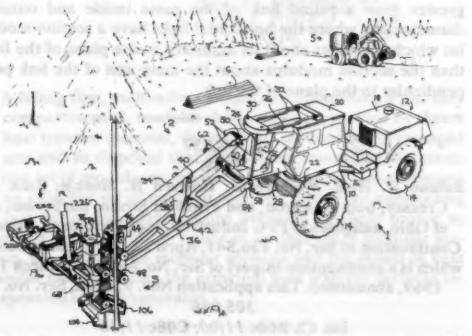
rests on the table and is freely movable thereon to permit its use at angles such as 45, 60 or 90 degrees to the work, as desired.

3,768,528
TREE TRUNK SHEAR
Robert D. Barwise, Route 2, Box 208, Bovey, Minn.
Filed Dec. 10, 1971, Ser. No. 206,675
Int. Cl. A01g *23/08*
U.S. Cl. 144—34 E 6 Claims



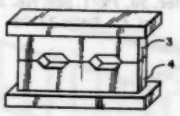
A tree trunk shear includes two opposed blades each pivotally mounted by two links to a U-shaped frame. Hydraulic power means is operative on the links adjacent the base of the U-shape frame to draw cutting edges of the blades toward each other and toward the base to slice through any tree trunks or other fibrous material positioned between the open arms of the U-shape frame. The relatively thin blades are held in position by the presence of heavy blade frames around the outer periphery of the blades except along their cutting edges.

3,768,529
ROUNDWOOD STUMP PROCESSOR
Bruce J. McColl, Whitby, Ontario, Canada, assignor to Owens-Illinois, Inc., Toledo, Ohio
Division of Ser. No. 10,976, Feb. 12, 1970, Pat. No. 3,643,709.
This application Oct. 7, 1971, Ser. No. 187,402
Int. Cl. A01g *23/02*
U.S. Cl. 144—309 AC 2 Claims



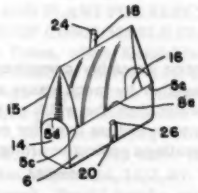
A method for harvesting trees into sectioned pulpwood bolts by means of an extendable head-reach mechanism and processor pivotally supported on a mobile vehicle for arculate horizontal movement and vertical elevational movement about and with respect to the machine.

3,768,530
STRUCTURAL MEANS AND A PROCESS FOR THE MANUFACTURE THEREOF
Spencer G. Coco, Baton Rouge, La., assignor to LCM Corporation, Baton Rouge, La.
Filed Oct. 8, 1971, Ser. No. 187,767
Int. Cl. B27f *7/00*
U.S. Cl. 144—318 18 Claims



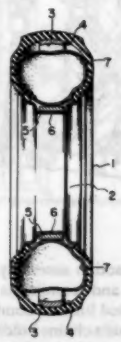
A structural means is produced from a single piece of structural material by cutting special patterns in the material and realigning the cut pieces in a particular fashion before attaching the pieces together.

3,768,531
TRAVEL KIT
Louis F. Kryznoski, Yardley, Pa., assignor to Atlantic Products Corporation, Trenton, N.J.
Filed Jan. 10, 1972, Ser. No. 216,358
Int. Cl. A45c *3/00*
U.S. Cl. 150—32 1 Claim



Improved TRAVEL KIT of three piece construction. The kit includes a closure means which remains in an open position during use.

3,768,532
MAGNET TIRE
Isamu Arai, 4735 Sasage-cho, Konan-ku, Yokohama, Japan
Filed Jan. 17, 1972, Ser. No. 218,209
Int. Cl. B60c *17/00*
U.S. Cl. 152—151 1 Claim



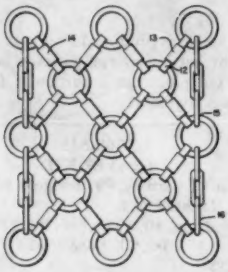
A magnet tire adapted for use on a wheel designed for use with a conventional pneumatic rubber tire, in which the magnetic zones are formed along the inside face of the tire tread

and along the tire mounting face of the rim, respectively, such that said zones are opposed to each other, with their opposed faces having magnetism of same polarity.

3,768,533
VEHICLE TIRE PROTECTION ASSEMBLY

Roger L. Gower, Rm. 302, 1911 Jefferson Davis Hwy., Arlington, Va.

Filed Dec. 30, 1971, Ser. No. 214,065
Int. Cl. B60c *27/06*
U.S. Cl. 152—239 **5 Claims**

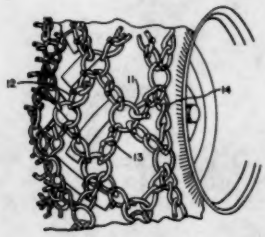


This tire protection assembly comprises a succession of rings connected together by metal straps and forming a net having a width greater then the width of the tire tread and being joined to form an endless band for mounting upon the vehicle tire, thus creating a protective armor for the tire.

3,768,534
SELF-ALIGNING TRACTION ASSEMBLY FOR VEHICLES

Roger L. Gower, Room 302, 1911 Jefferson Davis Hwy., Arlington, Va.

Filed Dec. 30, 1971, Ser. No. 214,067
Int. Cl. B60c *27/06*
U.S. Cl. 152—239 **10 Claims**

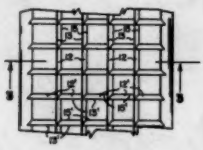


This product is a traction assembly designed primarily for heavy-duty vehicles, and comprises a chain assembly of unidirectionally distorted links in combination with rings connecting the same, and side chains holding the assembly securely upon the vehicle tire; the links of the traction portion having projecting lugs upon the outward face thereof, wherein the interaction of the rings and chains maintains the assembly in position for maximum contact of the lugs with the surface of the terrain.

3,768,535
TIRE TREAD

Ernest L. Holden, 3013 W. Port-au-Prince Ln., Phoenix, Ariz.

Continuation-in-part of Ser. No. 238,026, Sept. 7, 1971, abandoned. This application Dec. 3, 1971, Ser. No. 204,440
Int. Cl. B60c *11/06*
U.S. Cl. 152—209 R **2 Claims**

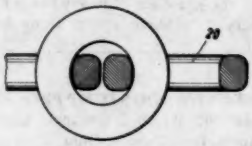


A tire tread employing a groove configuration shaped and positioned on the tire so that its edges maintain the groove open under load and stress conditions.

3,768,536
TIRE CHAIN

Hansjorg Rieger, Langerstrasse 90, Aalen/Wurtt, Germany

Filed Nov. 12, 1971, Ser. No. 198,234
Claims priority, application Germany, Nov. 13, 1970, P 20 56 838.1
Int. Cl. B60c *27/06*
U.S. Cl. 152—239 **10 Claims**



An anti-skid tire chain having horizontal and vertical links wherein the vertical links have a cross-sectional area which is greater than a round link of the same inside and outside diameter and where the horizontal links have a section modulus which is greater about its main axis in the plane of the link than the section modulus about the main axis of the link perpendicular to the plane of the link.

3,768,537
TIRE

Roland H. Hess, Wadsworth; Howard H. Hoekje; Jack R. Creasey, both of Akron, and Franklin Strain, Barberton, all of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Ohio

Continuation of Ser. No. 136,541, April 22, 1971, abandoned, which is a continuation-in-part of Ser. No. 806,277, March 11, 1969, abandoned. This application Nov. 9, 1972, Ser. No. 305,046
Int. Cl. B60c *11/00*; C08c *11/10*
U.S. Cl. 152—330 **12 Claims**

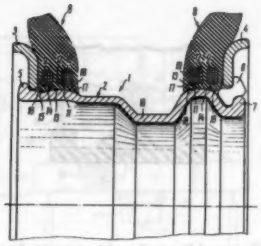
The novel tire is comprised of a silica-filled rubber compound which includes a coupling agent such as mercaptopropyl trimethoxysilane. The coupling agent is a compound that forms a bond or connection between rubber and silica. The coupling agent is preferably allowed to interact with the silica prior to incorporating the polar compounds, such as metallic oxide accelerators, into the rubber compound.

3,768,538

WHEEL RIM FOR PNEUMATIC TYRE

Gennady Vasilievich Saveliev, Ulitsa Energetikov, 10, kv. 23, Chelyabinsk, U.S.S.R.

Filed Aug. 9, 1971, Ser. No. 170,150
Int. Cl. B60c 5/16
U.S. Cl. 152—410 2 Claims



The wheel rim has face side flanges adjoining the seating surfaces for setting thereon the bases of the tyre beads.

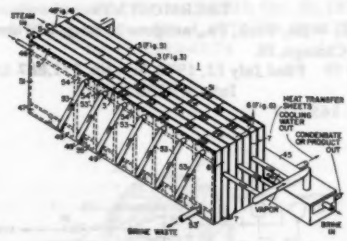
These seating surfaces are shaped as convex rollers whose apices are located under the middle zone of the bases of the tyre beads, while the slopes of these rollers are directed to the side flanges and gradually transform into recesses, in which stick the heels of the bases of the tyre beads, thus providing for reliable fixing of the tyre on the wheel rim.

3,768,539

MODULAR ARRANGEMENT OF FALLING FILM MULTIPLE EFFECT EVAPORATOR

Richard M. Chamberlin, McKeesport, Pa., and Leif Bjornkjaer, Waterloo, Belgium, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 12, 1971, Ser. No. 161,799
Int. Cl. B01d 1/22, 1/26, 1/00; F28f 3/00; B01d 3/02
U.S. Cl. 159—13 A 8 Claims



A falling film, multi-effect evaporator comprising a plurality of compartmented, modular shell sections separated by sheets of heat transfer material, the modular sections being arranged in sets and so disposed that liquor from lower compartments of one set of modular sections is raised to upper compartments of an adjacent set of modular sections, and vapor condensing in one set of modular sections provides the heat source to vaporize a portion of the liquor in another set of modular sections, the walls of the modular sections and the sheets of heat transfer material being the principal heat transfer surfaces incorporated in the evaporator.

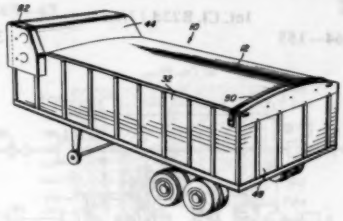
3,768,540

RETRACTIBLE CANOPY SHELTER

Thad M. McSwain, 1908 S. Columbus, Stuttgart, Ark.

Filed June 17, 1971, Ser. No. 153,951
Int. Cl. A47k 3/00
U.S. Cl. 160—23 R 1 Claim

A retractible panel construction, primarily in the nature of a canopy, comprising a storage roller mounted flexible panel selectively extended along and guided by a pair of laterally spaced track defining rails. Movement of the panel is controlled by a pair of panel mounted cables which engage and guide along the tracks with the panel extending from the



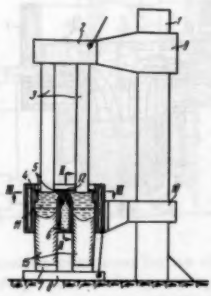
storage roller to the remote end of the area to be covered, the control cables engage about idler pulleys and are selectively wound on a take-up roller. The panel, when extended, incorporates a transversely arcuate rigidifying configuration.

3,768,541

PROCESS AND PLANT FOR ELECTROSLAG REMELTING OF CONSUMABLE ELECTRODES

Boris Evgenievich Paton, ulitsa Kotsjubinskogo, 9, kv. 21; Boris Izrailevich Medovar, bulvar Lesi Ukrainki, 2, kv. 8; Vitaly Mikhailovich Baglai, ulitsa Semashko, 10, kv. 54/3, all of Kiev; Georgy Emmanuilovich Tsukanov, ulitsa Ryleeva, 24/7, kv. 26, Moscow; Oleg Petrovich Bondarenko, ulitsa Kreschatik, 15, kv. 34, Kiev; Alexei Georgievich Bogachenko, ulitsa Miljutenko, 15/2, kv. 141, Kiev; Leonid Mikhailovich Stupak, Brest-Litovsky prospekt, 39, kv. 9, Kiev; Viktor Mikhailovich Martyn, ulitsa Vernadskogo, 67, kv. 81, Kiev; Jury Pavlovich Shtanko, ulitsa E. Potie, 9, kv. 92, Kiev, and Georgy Anatolievich Pavlichuk, ulitsa Erevanskaya, 8, kv. 8, Kiev, all of U.S.S.R.

Filed May 18, 1972, Ser. No. 254,682
Int. Cl. B22d 27/02
U.S. Cl. 164—52 11 Claims



A process for remelting electric-slag of consumable electrodes which has a higher density current in certain parts of the melting zone of the consumable electrodes.

A plant for practicing the above process incorporating a mould whose cavity is fitted with projections located in the melting zone of the consumable electrodes.

3,768,542

LEVEL CONTROL IN CONTINUOUS CASTING

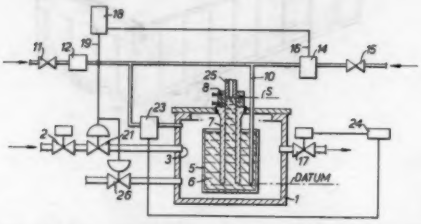
Clive James Arthur Bosworth, Kettering, and William Richardson Duguid, Corby, both of England, assignors to British Steel Corporation, London, England

Filed June 18, 1971, Ser. No. 154,319

Claims priority, application Great Britain, June 24, 1970, 30,546/70

Int. Cl. B22d 17/32

U.S. Cl. 164—155 3 Claims



Continuous casting of metal, particularly upward pressure casting of metal, in which molten metal is passed from a melting vessel to a mould from which the solidified metal is continuously extracted, wherein pressure changes in the molten metal at a predetermined position within the vessel are detected and the pressure of the molten metal at the inlet to the mould is thereby controlled so as to be substantially constant. The molten metal pressure is preferably controlled by controlling the flow of pressurising gas to the vessel.

3,768,543

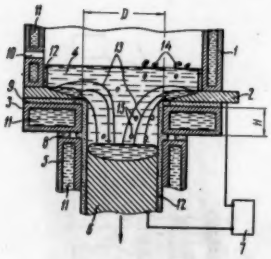
ELECTRO-SLAG FURNACE FOR PRODUCING CONTINUOUS INGOT

Vitaly Nikolaevich Kolisnyk, ul. Michurina, 29, kv. 1, Kiev, U.S.S.R.

Continuation-in-part of Ser. No. 692,452, Dec. 21, 1967, abandoned. This application June 15, 1971, Ser. No. 153,294

Int. Cl. B22d 27/02

U.S. Cl. 164—252 5 Claims



An electro-slag furnace for producing a continuous metallic ingot comprises a housing having a bottom portion in which an electrode constituted of the forming ingot is shiftable. A further electrode is spaced above the ingot electrode and a cooling channel is provided to cool the slag in the furnace to form a slag crust on the wall of the channel. The depth of the bottom portion between the electrodes is determined as a function of the diameter of the channel such that the thickness of the crust layer on the channel wall relative to the length thereof between the electrodes is sufficient for preventing a shunting electric discharge between the channel wall and slag.

3,768,544

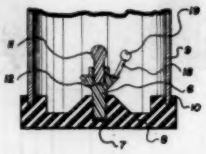
JEWELRY OR TOOTH-CROWN MOLDING DEVICE

Slomo J. Padeh, 1285 52nd St., Brooklyn, N.Y.

Filed Dec. 10, 1971, Ser. No. 206,642

Int. Cl. B22c 7/02, 9/04

U.S. Cl. 164—376 9 Claims



For use in the molding of gold crowns for teeth, and of jewelry articles, in a preferred embodiment for gold-crown production, a threaded male insert structure with the male threaded portion being insertable downwardly into a plaster-molding rubber-base hole such that the sides of the hole are supportable uprightly of the insert structure, with the insert structure defining a head structure having a threaded female receptacle centrally thereof extending downwardly in an end of the insert opposite from the threaded male portion, and the head structure defining a plurality of recesses around the periphery thereof with the openings to the recesses facing upwardly and the recess-defining structures being such as to make the recesses receivable of each of a wax stem mountable of a wax crown-form.

3,768,545

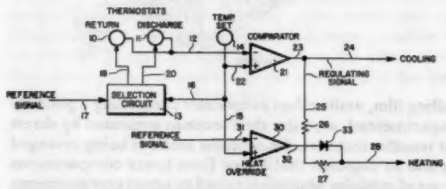
TEMPERATURE CONTROL SYSTEM WITH MULTIPLE THERMOSTATS

Frank E. Wills, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed July 12, 1972, Ser. No. 271,087

Int. Cl. F25b 29/00

U.S. Cl. 165—27 6 Claims



A heating-cooling control system includes thermostats in the discharge and return air passages, and a temperature set dial. A selection circuit energizes one of the thermostats below a preset temperature, and the other thermostat is energized above that temperature. A heat override circuit prevents a call for heat above a certain temperature.

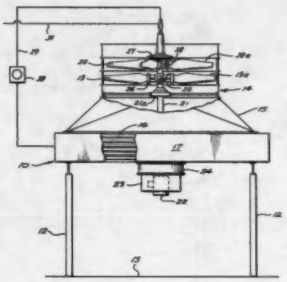
With two compressors, the first compressor is maintained off by a timer circuit for a short time to prevent cycling of the compressor. Another timing circuit briefly delays operation of the second compressor, when the cooling system calls for its operation, to prevent simultaneous energization of both compressors and an excessive demand on the electrical supply line or unit.

3,768,546

AXIAL FLOW FAN ASSEMBLY

Kelly V. Shipes, Houston, Tex., assignor to Hudson Products Corporation, Houston, Tex.

Filed Dec. 27, 1971, Ser. No. 212,555
Int. Cl. F01d 7/00; F28f 27/00; B60h 1/20
U.S. Cl. 165—39 6 Claims



An axial flow fan assembly having two or more fans in series to provide successive fan stages in which less than the total number of fans are of the variable pitch type.

3,768,547

ARRANGEMENT TO CONTROL HEAT FLOW BETWEEN A MEMBER AND ITS ENVIRONMENT

John S. Best, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 85,515, Oct. 30, 1970, abandoned. This application Feb. 4, 1971, Ser. No. 112,636
Int. Cl. E21b 43/24
U.S. Cl. 165—45 49 Claims

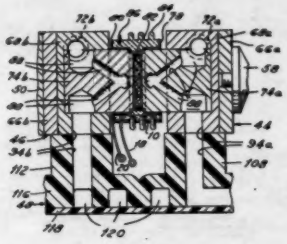
An arrangement of insulating, thermal absorbing and/or dissipating elements controlling heat flow between a member and its environment. In certain permafrost environments, for example, one or more elements of the system can include a heat sink and/or a thermal bleed where the member is heated. The arrangement controls heat flow from a heated member at such a rate that the total heat transfer does not exceed the limits of the residual heat capacity of permafrost below the freezing point thereof during cyclic climatic influences. The arrangement takes advantage of the fact that artificial heat from the heated member can be controlled, while natural solar heat is balanced by the seasons. The elements also serve to maintain relatively stable temperature differentials between heated or cryogenic materials and their adjacent ground support, so there is a minimal effect of one on the other.

3,768,548

COOLING APPARATUS FOR SEMICONDUCTOR DEVICES

Walter Dilay, Dearborn, and Edward J. Zulinski, Berkley both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 2, 1972, Ser. No. 231,300
Int. Cl. F24h 3/00
U.S. Cl. 165—47 6 Claims



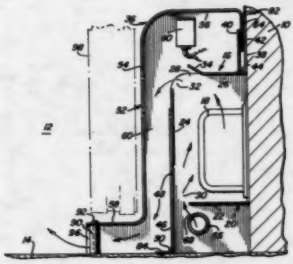
Apparatus is described for cooling one or more semiconductor devices, such as diodes or thyristors or transistors, with a liquid. The apparatus includes first and second heat-sink members positioned in electrical contact with electrodes of the semiconductor device. The heat-sink members have flow passages within them, and a manifold having at least one flow passage within it interconnects the flow passages in the heat-sink members. During the use of the semiconductor device, a liquid coolant is circulated through the flow passages in the manifold and heat-sink members to effect cooling of the device.

3,768,549

BASEBOARD ELECTRIC HEATER SHIELD

Muriel L. Goodie, Toms River, N.J., assignors to Robert J. Vessio; Frank E. Valeri, both of Brick Town, N.J.; a part interest to each

Filed Jan. 3, 1972, Ser. No. 214,865
Int. Cl. F24h 9/02
U.S. Cl. 165—55 7 Claims

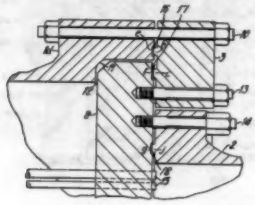


A readily removable enclosure for an electric baseboard heater and including structure for pumping air to be heated therethrough in intimate contact with the heat transfer surfaces of the baseboard heater. The air inlet for the housing or cover is disposed at one end thereof and the outlet is disposed at floor level and opens horizontally outwardly from the wall along which the electric baseboard heater extends. The low horizontal outlet for the cover enables the latter to be disposed behind drapes and to discharge heated air into the associated room through a vertically short zone extending along the heater beneath the lowermost marginal edge of the drapes which need be only slightly spaced above the associated floor structure.

3,768,550
HEAT EXCHANGER

Alexander Williamson; John Donald Robinson, and James Richard Brass, all of Norton, Stockton-on-Tees, England, assignors to Imperal Chemical Industries Limited, London, England

Filed May 14, 1971, Ser. No. 143,479
Claims priority, application Great Britain, June 2, 1970, 26,563/70
Int. Cl. F28f 9/02
U.S. Cl. 165—76 4 Claims

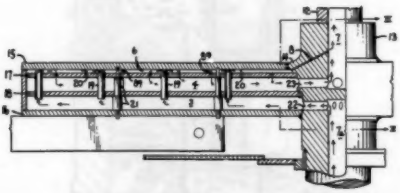


A U-tube heat exchanger so designed that gaskets between the tube-plate carrying the tube bundle and the chambers through which the heat exchange fluids pass are accessible and replaceable without withdrawing the tube bundle.

3,768,551
ROTARY TABLE FOR FLAKING APPARATUS

Daniel E. Wiley, Corpus Christi; Harmon A. McDougal, Beaumont, both of Tex., and Allan L. Turner, Denver, Colo., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 163,900, July 19, 1971, Pat. No. 3,707,182, which is a division of Ser. No. 883,516, Dec. 9, 1969, Pat. No. 3,642,053. This application Aug. 17, 1972, Ser. No. 281,607
Int. Cl. F28d 11/00; F28f 7/00
U.S. Cl. 165—93 5 Claims

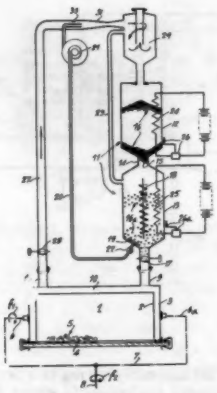


A rotary table is described for use in producing flakes of solid material from solutions or from molten metal baths. In particular the invention is described with reference to the preparation of sodium-lead alloys. In the specific embodiment molten sodium-lead alloy is deposited on the surface of a rotating flat table. Indirect heat exchange is established between the molten metal and a fluid circulating underneath the table surface. Discharge orifices are provided in a chamber below the table surface at a multiplicity of points across its width. Uniform discharge of heat exchange fluid at all points across the undersurface of the table is accomplished by an equal pressure drop being maintained across all of the orifices.

3,768,552
DEVICE FOR HEATING AND COOLING VARIOUS PRODUCTS

Pierre Alfred Leon Ciraud, Chemin de Saint-Roch, Chateaubernard, Cognac (Charente), France

Filed Sept. 25, 1970, Ser. No. 75,446
Int. Cl. F28d 15/00
U.S. Cl. 165—107 12 Claims

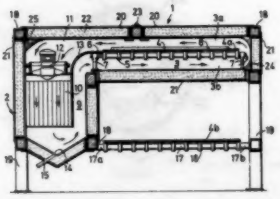


The device comprises two containers respectively superposed and communicating through a valve. Each container is fitted with heat exchange elements and contains a load of pulverulent material maintained in fluid state. Gaseous transfer means are provided to move a part of the load to a treatment area and therefrom to the inlet of the first container.

3,768,553
COOLING TUNNEL

Helmut Sollich, Talle, Germany, assignor to Sollich OHG

Filed Dec. 20, 1971, Ser. No. 209,807
Claims priority, application Germany, Mar. 27, 1971, P 21 14 906.4
Int. Cl. F24h 3/02
U.S. Cl. 165—120 7 Claims



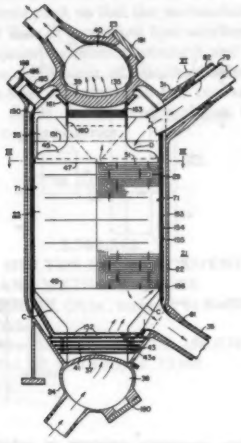
A cooling tunnel having an L-shaped cross-section defining a horizontal leg and a vertical leg. The material-receiving run of a continuous conveyor passes through the horizontal leg, and the reverse conveyor run is located outside the tunnel. An evaporator is arranged within the vertical leg, and a guide sheet extends from the evaporator into the horizontal leg dividing the latter into upper and lower cooling zones. A ventilator directs air downwardly through the evaporator and through the cooling zones in directions perpendicular to the direction of movement of the conveyor. The lower end of the vertical leg is formed to collect condensation and is provided with an outlet for removing condensed water.

3,768,554

STEAM GENERATOR HEATED WITH LIQUID METAL

William F. Stahl, Media, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 10, 1968, Ser. No. 735,598
Int. Cl. F28f 9/02
U.S. Cl. 165—134 6 Claims



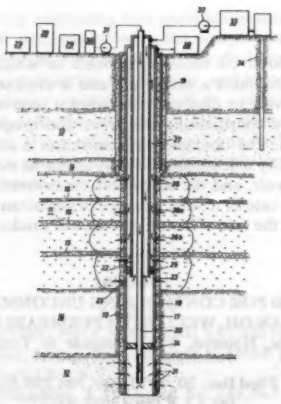
A compact liquid-metal heated vapor generator (21) in which the liquid metal is typically sodium and the secondary fluid is water. The water is conducted through tubes (29) of serpentine configuration with the serpentine turns (51–53) nested. The tubes (29) are in modular bundles (27) and the modules extend throughout the interior of the pressure vessel (23). The sodium flows countercurrent to the secondary fluid, through the vessel, penetrating between the tubes in intimate heat-exchange relationship with the tubes. The tubes (29) are sealed through tube sheets (37), (39); the upper tube sheet (39) above the level of the sodium and the lower tube sheet under a stagnant or quiescent zone (41) of sodium.

3,768,555

WELL SYSTEM

Freer T. Levens, 2011 Winfield Rd., Midland, Tex.

Filed Feb. 3, 1972, Ser. No. 223,191
Int. Cl. E21b 43/00
U.S. Cl. 166—67 5 Claims



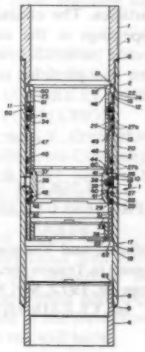
A dually completed well system is provided which can simultaneously produce a brine from injected fresh water and dispose of a produced liquid, such as salt water produced from oil wells. In the systems, a cased borehole extends through one or more salt sections to a disposal formation. A disposal conduit extends from the surface to the disposal formation and is packed off so that the liquid to be disposed must flow into the disposal formation. At the same time, a fresh water injection conduit is installed in the well and packed off so that fresh water pumped down through this conduit will flow out through openings in the casing into the salt section. While such water is in this section, it dissolves salt and becomes brine which is displaced up the casing by the incoming new fresh water.

3,768,556

CEMENTING TOOL

Eugene E. Baker, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed May 10, 1972, Ser. No. 254,630
Int. Cl. E21b 33/16
U.S. Cl. 166—154 9 Claims



A cementing tool for providing multiple stage cementing of an oil well has an outer case, a closing sleeve located concentrically therein, upper and lower adapters, a releasing sleeve, an opening sleeve, and a sleeve retainer located within the closing sleeve.

3,768,557

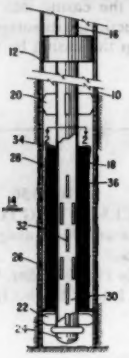
PREPACKED MULTI-GRADED SAND SCREEN

James W. Spurlock; George C. Howard, both of Tulsa, Okla., and William G. Bearden, deceased, late of Tulsa, Okla. (by Edith Mae Bearden, administratrix), assignors to Amoco Production Company, Tulsa, Okla.

Filed Apr. 23, 1971, Ser. No. 136,777
Int. Cl. E21b 43/08
U.S. Cl. 166—228 6 Claims

This is a special downhole graded mutli-layer prepacked sand filter for oil and other fluids containing sand. The preferred embodiment for the sand filter includes an inner annular consolidated layer of particles placed about a slotted pipe, an intermediate annular layer of consolidated particles adjacent said inner layer and an outer annular layer of consolidated particles next to the intermediate layer of particles.

There is an opening or spacing between the particles to permit flow through the prepacked liner. The spacing between the particles of the outer annular layer is such to retain only the coarser sand particles and the spacings or openings in the inner two annular layers are progressively smaller to retain the



less coarse sand particles. The coarser sand particles bridge about the larger openings in the outer annular layer and progressively finer sand materials bridge across the openings or spacings between the particles of the intermediate and inner annular layers.

3,768,558

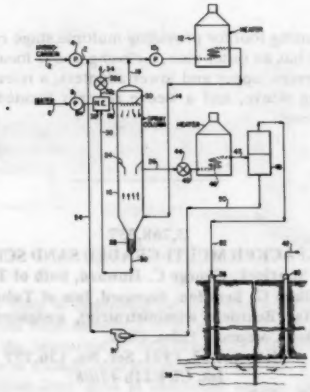
OIL RECOVERY PROCESS UTILIZING SUPERHEATED STEAM

Joseph C. Allen, Bellaire, and Thomas S. Teasdale, Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed June 30, 1972, Ser. No. 267,798

Int. Cl. E21b *43/24*

U.S. Cl. 166—272 **7 Claims**



A secondary recovery process in which steam or superheated steam generated from a mixture of fresh, brackish or brine water and a heavy hydrocarbon or mixture of heavy hydrocarbon compounds is injected into an oil-bearing formation and oil is recovered from a producing well located at a substantial distance from the injection well.

3,768,559

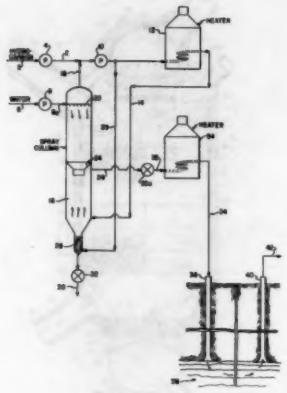
OIL RECOVERY PROCESS UTILIZING SUPERHEATED GASEOUS MIXTURES

Joseph C. Allen, Bellaire, and Thomas S. Teasdale, Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed June 30, 1972, Ser. No. 267,799

Int. Cl. E21b *43/24*

U.S. Cl. 166—272 **6 Claims**



A secondary recovery process in which a superheated steam-hydrocarbon vapor mixture is injected into an oil-bearing formation and oil is recovered from a producing well located a substantial distance from the injection well.

3,768,560

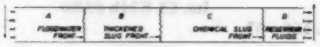
WATERFLOOD OIL RECOVERY WITH CHROMATOGRAPHICALLY BALANCED SURFACTANT AND

Harold J. Hill, and David Ross Thigpen, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 26, 1971, Ser. No. 192,116

Int. Cl. E21b *43/16*

U.S. Cl. 166—274 **13 Claims**



A waterflood oil recovery process in which an aqueous liquid that contains a surfactant and a thickener is injected into a reservoir to displace oil toward a recovery location is improved by coordinating the types and proportions of the components. The thickener concentration is adjusted to provide a mobility at least substantially as low as that of the fluids in the reservoir, and the surfactant concentration is adjusted to provide a rate of frontal advance of surfactant that substantially equals the rate of frontal advance of thickener.

3,768,561

METHOD FOR CONTROLLING UNCONSOLIDATED SAND IN AN OIL WELL WITH PERMEABLE CEMENT

Jack F. Tate, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,887

Int. Cl. E21b *43/02, 43/27*

U.S. Cl. 166—281 **25 Claims**

The movement of unconsolidated sand from a subterranean hydrocarbon-containing formation into a wellbore during

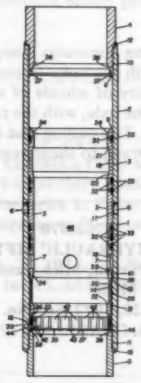
recovery of the formation hydrocarbon fluids is prevented by forming a permeable, acid-susceptible cement barrier between the formation and the wellbore. The permeability of said acid-susceptible cement barrier or pack traversing a producing formation is improved by treatment with a composition comprised of mineral acid having dissolved therein a vinylpyrrolidone polymer, which composition slowly reacts with acid-soluble components accumulated at the pack face and within the cement pack so that the permeability of the cement barrier to the flow of formation hydrocarbon fluids is increased while adequate mechanical strength and proper pore size to prevent the movement of unconsolidated formation sand into the bore-hole is maintained and recovering formation hydrocarbon fluids from the formation through the formed permeable cement barrier.

3,768,562

FULL OPENING MULTIPLE STAGE CEMENTING TOOL AND METHODS OF USE

Eugene E. Baker, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed May 25, 1972, Ser. No. 256,870
Int. Cl. E21b *33/13, 33/00*
U.S. Cl. 166—289 **23 Claims**



A full opening cementing tool particularly suitable for cementing an oil well, and allowing the completion of as many cementing stages as desired, utilizes a cylindrical housing, a sliding valve sleeve within the housing, and an opening positioner and a closing positioner located on a pipe string within the casing for actuating the sliding valve sleeve at the appropriate times. Other tools such as isolation packers and circulating valves may be used advantageously in conjunction with one or more of the cementing tools.

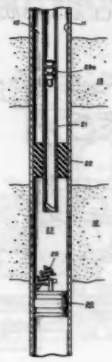
3,768,563

WELL TREATING PROCESS USING SACRIFICIAL PLUG

Elmo M. Blount, Irving, Tex., assignor to Mobil Oil Corporation, New York City, N.Y.

Filed Mar. 3, 1972, Ser. No. 231,567
Int. Cl. E21b *33/16, 43/25*
U.S. Cl. 166—291 **13 Claims**

The specification discloses a well treating process wherein a sacrificial plug is used to separate two treating fluids while they are being injected into a formation interval within a wellbore through a common tubing. The sacrificial plug is formed



from material which will maintain its integrity while in the tubing but will decompose upon reaching its destination within the wellbore.

3,768,564

METHOD OF FRACTURE ACIDIZING A WELL FORMATION

John A. Knox, and Sherman E. Fredrickson, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 26, 1971, Ser. No. 137,625
Int. Cl. E21b *43/27*
U.S. Cl. 166—307 **12 Claims**

The present invention relates to an improved method of fracture acidizing underground well formations so that the production of oil and gas therefrom is increased. By the method of the present invention high capacity flow channels are created and sustained in the formation, particularly in the area thereof adjacent to the well bore.

3,768,565

FRICTION REDUCING

Leonard John Persinski, and Jerry Emile Boothe, both of Pittsburgh, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Sept. 29, 1971, Ser. No. 184,896
Int. Cl. E21b *43/26*
U.S. Cl. 166—308 **5 Claims**

Polymers containing 2-acrylamido-2-methylpropane sulfonic acid are useful as friction reducers for aqueous fluids flowing through a conduit, especially for the aqueous hydraulic fracturing of subterranean formations.

3,768,566

METHODS FOR FRACTURING HIGH TEMPERATURE WELL FORMATIONS

John W. Ely; Jiten Chatterji; Marlin D. Holtmyer, and John M Tinsley, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 90,301, Nov. 17, 1970, abandoned. This application Apr. 18, 1972, Ser. No. 245,278
Int. Cl. E21b *43/26*
U.S. Cl. 166—308 **18 Claims**

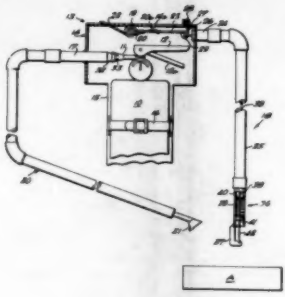
This invention provides a fracturing fluid having a high viscosity at temperatures above 200°F comprising an aqueous fluid having a pH of less than 7, a water soluble alcohol and a corsslinked polysaccharide.

3,768,567

AUTOMATIC REMOTE CONTROL DISCHARGE SYSTEM FOR PORTABLE FIRE EXTINGUISHERS

George Weise, 1462 Alps Rd., Wayne, N.J.

Filed Dec. 14, 1971, Ser. No. 207,832
Int. Cl. A62c 35/02
U.S. Cl. 169—26 2 Claims



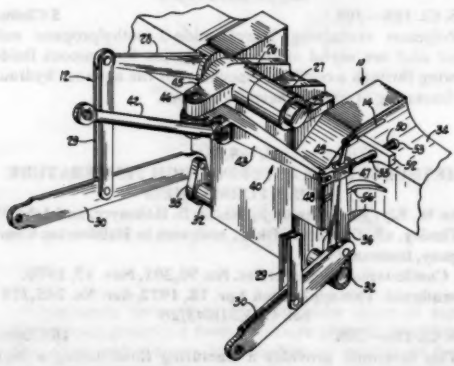
An automatic remote control discharge system for tank-type portable fire extinguishers of the type having a discharge nozzle and a spring-pressed operating lever at the upper end of the unit. A housing structure including means for removably securing an ordinary fire extinguisher thereto has a housing portion partially enclosing the upper end of the attached fire extinguisher, including an actuating lever movable between non-operating and operating positions. Spring means is provided for resiliently urging the actuating lever in its operating position, and releasable trigger mechanism is provided for normally retaining the actuating lever in its non-operating portion against the urging of the spring means. A trip wire cable interconnecting the trigger mechanism with a remote fusible device serves as heat sensing means operative to release the actuating lever so that it abuts and presses downwardly upon the extinguisher operating lever for discharging a fire extinguishing substance from the nozzle. Pipe means communicating at one end with the fire extinguishing nozzle, conveys a fire extinguishing substance to the remote zone of heat detected by the heat sensing means.

3,768,568

DRAFT RESPONSIVE THREE-POINT HITCH

Ronald D. Pitsch, Minnetonka, Minn., assignor to White Farm Equipment Company, Hopkins, Minn.

Continuation of Ser. No. 879,213, Nov. 24, 1969, abandoned.
This application Dec. 3, 1971, Ser. No. 204,729
Int. Cl. A01b 63/112
U.S. Cl. 172—7 2 Claims



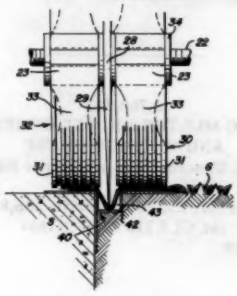
A three-point hitch for trailingly mounting an agricultural implement on a tractor. The hitch has three links which are connected to the tractor and are movable fore and aft. The links are interconnected at the tractor by means of a reaction linkage. The linkage is arranged to transmit only horizontal forces to a hydraulic control system for improved draft control.

3,768,569

GRASS-TRIMMING DEVICE

Eugene B. Nunnery, 5113 W. Gate Hills, Meridian, Miss.

Filed Mar. 22, 1971, Ser. No. 126,622
Int. Cl. A01d 35/00
U.S. Cl. 172—17 18 Claims



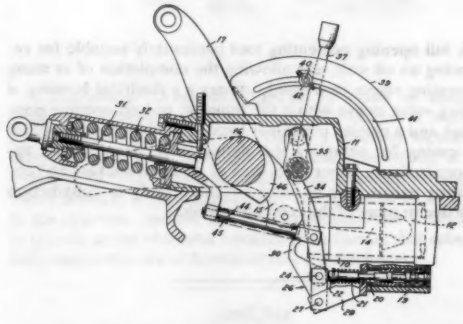
A track-guided cutting apparatus comprising a yoke frame secured to a handle with the yoke frame carrying an axle. A cutting disc and plurality of wheels of resilient material are rotatably mounted on the axle, with the rotation of the wheels driving the cutting disc. The cutting disc is adapted to run in a groove defined by the track to shear vegetation overlying the track.

3,768,570

TRACTOR HYDRAULIC LIFT SYSTEM

Lawrence R. Green, Warren, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 28, 1972, Ser. No. 266,915
Int. Cl. A01b 63/112
U.S. Cl. 172—9 3 Claims



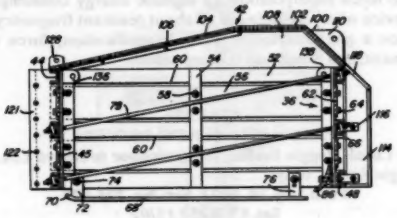
A tractor hydraulic lift control system is provided with a manually adjusted quadrant lever for determining the draft at which the tractor is to operate and a second manually adjusted quadrant lever for determining the implement height. The draft control may raise the implement above the height determined by the position control but may not lower it below the height determined by position control.

3,768,571

CABLE OPERATED DREDGING SCOOP

Walter D. Renfroe, Geneva, N.Y., assignor to Terra Marine Scoop Company, Inc., Geneva, N.Y.

Filed Sept. 27, 1971, Ser. No. 183,854
Int. Cl. E02f 3/60
U.S. Cl. 172—26.5 9 Claims



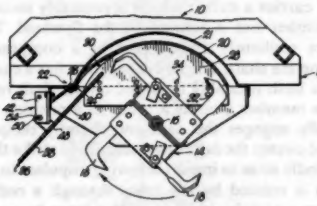
A scoop for removing mud, silt, or the like, from the bottom of bodies of water, such as ponds, lakes, streams, ditches, and the like, embodying an open bottomed scoop having supports along the bottom and along the rear thereof so that the scoop will collect material when pulled along the bottom surface in a forward direction with the scoop generally being horizontally disposed. The scoop can move in a reverse direction without collecting material with the scoop generally being vertically disposed.

3,768,572

STRUCTURE FOR ELIMINATING MUD COLLECTIONS IN FARM IMPLEMENTS

James E. McCanse; Frederick L. Faber, and Ivan E. Bauer, all of Oregon, Ill., assignors to Hesston Corporation, Hesston, Kans.

Filed Jan. 21, 1972, Ser. No. 219,689
Int. Cl. A01b 33/00
U.S. Cl. 172—112 3 Claims



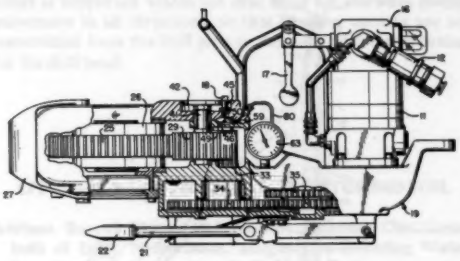
An inclined, tiltable, "live" guard of flexible material is positioned behind the rotating blades of a cultivator or tillage implement within the paths of materials such as dirt, mud, vegetation and debris flung upwardly and rearwardly by the blades to prevent accumulation, buildup and packing of the materials between the blades and the implement parts thereabove and therebehind. The flexure of the guard by impact of the materials thereon or by intermittent engagement of the blades with the accumulated materials and/or with the guard itself causes the materials to break away, eliminating the need for manual digging away of the buildup from the time to time by the operator. An adequate outlet and proper spacing also permit the materials to gravitate downwardly and rearwardly along the top surface of the guard.

3,768,573

POWER TOOL CONTROL

Carl H. Jennings, Midland, Tex., assignor to Texaco Inc., New York, N.Y.

Filed July 30, 1971, Ser. No. 167,759
Int. Cl. B25b 23/14
U.S. Cl. 173—12 6 Claims



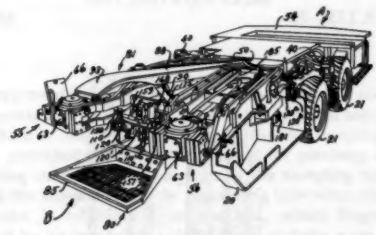
A power wrench that has a stationary part and a rotary part and a motor for rotating the latter, also has a switch for shutting off the power of the motor. The switch is actuated by a clutch-controlled arm that determines the degree of rotation of the rotary part after a preliminary tightening so that the degree of final tightening is closely controlled.

3,768,574

ROOF DRILLING AND BOLTING APPARATUS HAVING AN OPERATOR CARRYING AND PROTECTIVE DEVICE

John B. Long, Oak Hill, W. Va., assignor to The Marmon Group, Inc., Chicago, Ill.

Division of Ser. No. 129,337, March 30, 1971. This application Sept. 8, 1972, Ser. No. 287,404
Int. Cl. E21c 11/02
U.S. Cl. 173—23 10 Claims



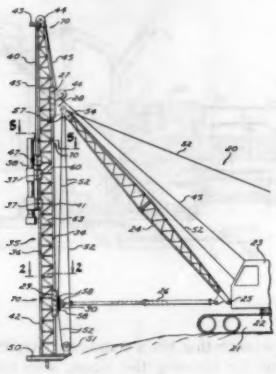
An operator protective device for operator controlled apparatus, the protective device including a platform upon which an operator may be situated and a canopy extending over at least a portion of the platform and having at least an overhanging portion thereof spaced from the platform to provide a protective cover over an operator situated on the platform. Means is provided to selectively increase and decrease the relative spaced apart distance between the platform and the portion of the canopy which extends thereover, which means may also include means for movement of both the platform and the canopy as a unit with respect to the apparatus while maintaining a fixed relative spaced apart distance between the platform and the portion of the canopy which extends thereover.

3,768,575

JOINT CONSTRUCTION FOR SECTIONAL LEAD

Alan G. MacKinnon, Newcomerstown, Ohio, and Robert M. Brode, deceased, late of Newcomerstown, Ohio (by Joyce Wallis Brode, executrix), assignors to The Foundation Equipment Corporation, Newcomerstown, Ohio

Filed June 14, 1972, Ser. No. 262,751
Int. Cl. E02d *7/14*
U.S. Cl. 173—43 **8 Claims**



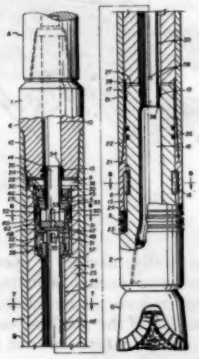
There is disclosed herein a sectional lead for a pile driver apparatus. The lead is of skeletal truss construction having parallel corner members providing front guideways for the pile driver and rear guideways for slides carried by a boom and kicker at the back. Interfitting connector portions carried by adjacent sections are attached by recessed pins having releasable fastener means, the pins being recessed below the lever of front and rear guideway surfaces of the corner members.

3,768,576

PERCUSSION DRILLING SYSTEM

Leo A. Martini, 5920 Sandhurst, Apt. 131, Dallas, Tex.

Filed Oct. 7, 1971, Ser. No. 187,299
Int. Cl. E21b *1/06, 5/00*
U.S. Cl. 173—73 **45 Claims**



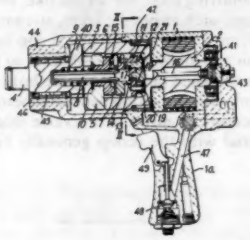
A unique, variably damped, steady state, broad range, fluid forced, force superposition, oscillatory, percussion drilling method and means, capable of resonant frequency operation and force magnification, is disclosed that is operable from liquid or gaseous fluid under pressure for rotary drilling of oil, gas, and water wells, geophysical holes, open strip mining blast holes, construction holes, and the like for greatly increasing the rate at which said bore holes are drilled. This comparatively simple prime mover produces sustained high frequency, high amplitude, longitudinal force spikes on a drill bit and synchronizes consumption of percussive force energy and drill collar weight force energy and superimposes one force upon the other to obtain instantaneous anvil accelerations of much greater magnitude than either force could, acting separately, to produce rock crushing forces of greater effectivity. In addition to force superposition an inphase energy consumption, this device when operating at or about resonant frequency will produce a phenomenon of force magnification, force reinforcement, and maximum transmissibility.

3,768,577

PNEUMATIC SCREW-DRIVERS

Primo Leoni, Reggio Emilia, Italy, assignor to Nuova L.A.P.I., Reggio Emilia, Italy

Filed July 28, 1972, Ser. No. 275,979
Int. Cl. B25d *15/02*
U.S. Cl. 173—93 **6 Claims**



A pneumatic screw-driver comprises a casing having a pneumatic motor housed in the rear part of the casing and a screw-driver spindle rotatably mounted in the front or nose of the casing. The rotor of the pneumatic motor is integral with a cup-shaped flywheel which projects forwardly to a position adjacent the spindle. The spindle has a radial lug on its rear end and a shaft secured to the spindle coaxially therewith projects rearwardly into the cup-shaped flywheel and is also coaxial with the latter. A sleeve member is slidably mounted on the shaft and carries a striker which is rotatably mounted on the sleeve member and is rotated by the flywheel. The lug and striker are resiliently urged apart by a compression spring disposed on the shaft. The sleeve member has a cam on its rear face and a bush rotatably mounted on the shaft rearwardly of the sleeve member mounts a roller in a position such that it periodically engages the cam and thereby reciprocates the striker and causes the latter periodically to strike the radial lug on the spindle so as to impart screwing impulses to the spindle. The bush is rotated by the rotor through a reduction gear mechanism which is coupled to the rotor by a shaft which serves as a torsion bar and absorbs torsional stresses. The casing includes a pistol grip having a trigger-actuated valve for controlling the admission of compressed air to the pneumatic motor.

3,768,578

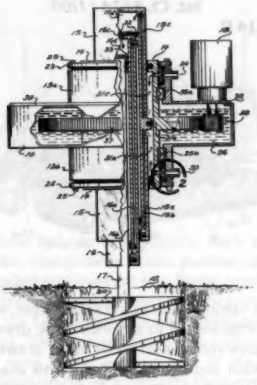
ROTARY & LINEAR DRIVEN DOUBLE-ACTING CYLINDER

Wayne B. Russell, Jr., 3895 Lugo Ave., Lynwood, Calif.

Filed Nov. 12, 1971, Ser. No. 198,258
Int. Cl. E21c *1/10*
U.S. Cl. 173—150 **14 Claims**

There is disclosed a drill-rig having a barrel member rotatably mounted to a support and having co-axially within it a shaft arrangement comprising a plurality of telescoped shaft

members which can be expanded and contracted. Provision is made for preventing relative rotation between the barrel member and the shaft members. The barrel member is driveable in rotation by a power drive so that the shaft is thus rotated, and hydraulic means is provided for expanding and



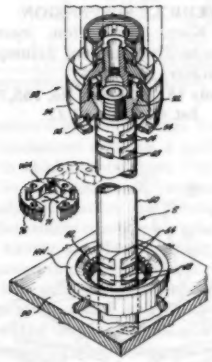
retracting the telescoped shaft arrangement. The support comprises an oil container providing lubrication for drive gears and for the bearings. Entry of the hydraulic fluid into spaces between the barrel and the outer shaft member is provided between parts of seals.

3,768,579

DRILL PIPE BREAKOUT MECHANISM

Harold T. Klein, Bellevue, Wash., assignor to The Robbins Company, Seattle, Wash.

Filed Dec. 27, 1971, Ser. No. 212,113
Int. Cl. E21b *19/16*
U.S. Cl. 173—164 **9 Claims**



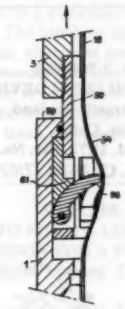
First and second collar like wrench members having radially outwardly directed peripheral teeth are respectively locatable about a turning wrench flat region of an upper section of drill type and a holding wrench flat region of the next lower section of drill pipe. The lower wrench member is held by a holding wrench having inwardly directing teeth for engaging complementary teeth on the holding wrench member. A drill head includes a breakout wrench having radially inwardly directed teeth which are engageable with the teeth on the upper wrench member. The upper section of pipe is thread connected to a collet internally of the drill head which is free to float axially relative to the breakout wrench on the drill head. The collet is spline connected to the drill head so that it rotates along with the drill head. The axial float permits the drill head to be hydraulically raised and lowered relative to the collet. The drill head is raised to provide room below the breakout wrench for installation of the upper wrench member, and is lowered to bring the teeth of the breakout wrench into engagement with the teeth of the upper wrench member. The collet is supported within the drill head for sideways pivotal movement in all directions, so that bending stresses are not transmitted from the drill pipe to the rotary drive mechanism for the drill head.

3,768,580

APPARATUS FOR TAKING AN UNDISTURBED SOIL SAMPLE

Adriaan Barend Mann, and Jacobus Johannes Christianus, both of Delft, Netherlands, assignors to Stichting Waterbouwkundig Laboratorium, Delft, Netherlands

Filed Oct. 26, 1971, Ser. No. 192,234
Int. Cl. E21b *9/20, 25/00, 49/02*
U.S. Cl. 175—251 **5 Claims**



An improved apparatus for taking an undisturbed soil sample supported by a flexible hose and an additional supporting tube which is coaxially positioned within the sampling tube proper, provided with clamping fingers for pinching off the supporting tube in the lower part of the sampling tube for keeping the sample within the supporting tube when the sampling tube is retracted from the soil, which fingers are operated by wedges when two mutually slidable parts of the sampling tube are moved by changing from pressing to pulling.

3,768,581

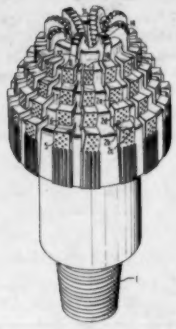
FRUSTRO-CONICAL DRILLING BIT HAVING RADIALLY TIERED GROUPS OF TEETH

Christian Rederon, Neuilly-sur-Seine, France, assignor to Compagnie Francaise Des Petroles, Paris, France

Filed May 2, 1972, Ser. No. 249,578
Claims priority, application France, May 4, 1971, 7115966
Int. Cl. E21b *9/36*
U.S. Cl. 175—329 **9 Claims**

A frustro-conical drilling bit having overlapping tiers of teeth arranged in radial groups. Each main group has an

arched nose projection, alternate ones of which depend into a central cavity to define drilling mud channels. Intermediate

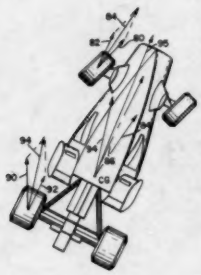


teeth groups are positioned between the main groups and each is closer to the following main group in the direction of rotation.

3,768,582
STABILIZING DEVICE

Maurice Phillippe, Hethersett, England, assignor to Vel's Ford Sales Co., Inc., Torrance, Calif.

Filed Feb. 14, 1972, Ser. No. 226,128
Int. Cl. B62d *37/02*
U.S. Cl. 180—1 FV **5 Claims**

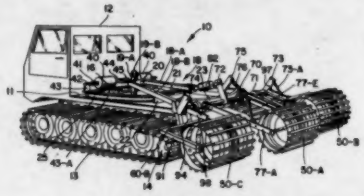


The invention describes a pair of air foils having a positive dihedral angle with respect to each other. The air foils are inverted and generate a force in a downward direction that is normal to the lifting plane of the air foils. The downward force generates a vertical component which is added to the weight of the vehicle for improving traction and also generates a horizontal component. With the vehicle moving in the direction it is pointing the horizontal components generated by each air foil are equal and opposite and hence balance each other. During a turn in which the vehicle yaws, the inboard air foil generates more downward force and a greater horizontal force than the outboard air foil. The asymmetrically generated forces result in an increased vertical component and an increased horizontal component on that side of the car going into the turn thereby counteracting the centrifugal forces which increase stability of the vehicle in turn.

3,768,583
LOAD TRANSFERRING HITCH FOR STEERING A VEHICLE

Donald H. Waterman, Poland Spring, Maine, assignor to Valley Engineering, Inc., Gray, Maine

Division of Ser. No. 859,945, Sept. 22, 1969, Pat. No. 3,652,106. This application Oct. 18, 1971, Ser. No. 190,362
Int. Cl. B62d *11/00*
U.S. Cl. 180—14 R **3 Claims**

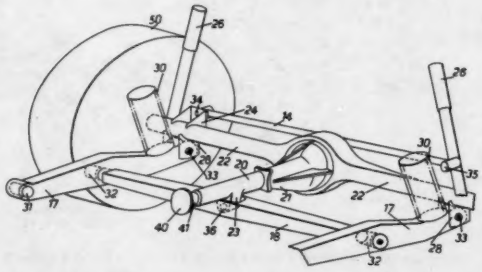


A hitch for a vehicle such as a track tractor, wheeled tractor or the like for attachment to a device to be drawn by the vehicle such as a snow roller, harrow or other drawn implement or towed load which does not interfere with manual or power steering of the vehicle by the customary steering devices and which, at the option of the operator, may be used to assist him in steering and also to steer the vehicle without using the customary manual or power steering devices. The preferred embodiment of the hitch also includes means by which the pressure of the device which is being drawn upon the surface of the earth, a snow surface or the like, may be varied to increase or decrease the effectiveness of the device in assisting in steering the vehicle with the manual or power steering devices or in steering the vehicle without using the customary steering devices. The hitch is also designed to accommodate power driven shafts to transmit power from the vehicle transmission to drive the device which is being drawn, which are so positioned relative to the vehicle and to the elements of the hitch that the need for universal joints and the like are eliminated.

3,768,584
VEHICLE SUSPENSION

Charles Spencer King, Cubbington, near Leamington, England, assignor to The Standard Triumph Motor Company Limited, Coventry, England

Filed July 15, 1971, Ser. No. 165,776
Int. Cl. B60k *17/32*
U.S. Cl. 180—73 R **9 Claims**



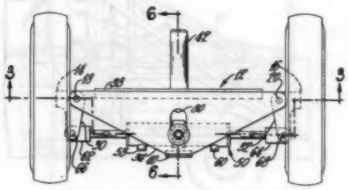
A vehicle suspension for a beam axle locates the axle by a pair of trailing arms which have a bridge member extending between the arms parallel to, and forwardly of, the axle. The differential housing of the axle has a rigid projection which is connected to the bridge member by means controlling the degree of movement of the axle about the longitudinal axis of the vehicle.

3,768,585

STEERING AXLE

Nicholas J. Matteo, Philadelphia, Pa., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 17, 1971, Ser. No. 172,458
Int. Cl. B62d 5/10
U.S. Cl. 180—79.2 R 4 Claims



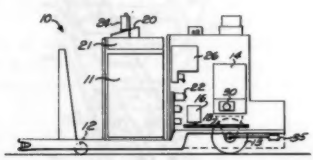
A steering axle for use in a vehicle, such as an industrial truck or the like, comprises a frame portion, spindle portions pivotably mounted with respect to a frame portion, and a double-acting hydraulic cylinder mounted transversely on said frame portion for both rotational and translational movement relative thereto. The piston rod of the hydraulic cylinder is connected at each distal end to one of the steering arms whereby the application of hydraulic fluid pressure in either direction will cause translational and rotational movement of said piston rod and cylinder to thereby provide differential steering of the vehicle.

3,768,586

VEHICLE GUIDANCE SYSTEM

Robert F. Thompson, Croydon, Pa., and John W. McDonell, Newark, Calif., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 23, 1971, Ser. No. 201,520
Int. Cl. B60k 27/06; B62d 1/24
U.S. Cl. 180—98 15 Claims



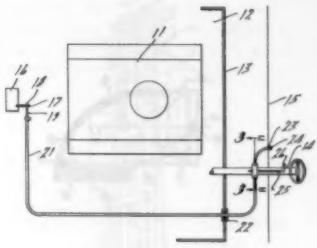
A vehicle guidance system includes first and second current-carrying conductors defining a portion of the vehicle guide path and in which current flows. The current in one conductor is equal in magnitude to 90° and out of phase with the current in the other conductor. The conductors, when located in a parallel substantially overlapping relationship, establish a magnetic field having an effective phase different from the phase of the current in either conductor. The conductors are separated at at least one point of divergence to define separate vehicle guidepaths. A sensor unit on the vehicle sense the magnetic field of the conductors and controls the steering of the vehicle. The circuit which responds to the sensing unit is selectively controlled so that an output signal from only one or the other of the conductors controls the vehicle steering. In addition, the sensor unit which is on the vehicle senses data located along the guidepath in the form of lobes or nodes defined by the conductors. Furthermore, the sensor functions to sense phase modulation in the guidepath conductors as controlled from a central processor, and additional circuit means senses a change in phase modulation in the current flowing through the conductors and provides an output in response thereto so that data can be transmitted to the vehicle by phase modulation of the current transmitted through the guidepath conductors.

3,768,587

ANTI-THEFT HOOD RELEASE

Harold C. Gebhard, Livonia; Victor E. Turashoff, Warren, and Paul A. Westerdale, Riverview, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 27, 1972, Ser. No. 248,225
Int. Cl. B60r 25/00
U.S. Cl. 180—114 5 Claims



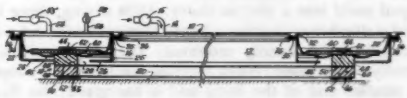
In combination, a Bowden cable having a movable element adapted to be coupled to a latch mechanism release lever for actuating the latch mechanism from a remote location and a locking mechanism for rendering the cable movable element inoperative to actuate the release lever. The locking mechanism comprises a housing through which the Bowden cable projects and through which a blocking rod is slidably guided for movement in a direction normal to the movement of the cable element. The blocking rod has a portion selectively engageable with an abutment on the movable cable element. Key operable means are coupled to the rod for shifting the latter in a direction to place its blocking portion in opposition to the cable element abutment to prevent movement of the cable element in latch mechanism release lever actuating direction.

3,768,588

STRUCTURE TO FORM A LOAD-BEARING AIR CUSHION FOR A VEHICLE

Jack F. Vaughen, 26807 Spring Creek Rd., Palos Verdes Peninsula, Calif.

Continuation-in-part of Ser. No. 75,923, Sept. 28, 1970, abandoned. This application Aug. 16, 1971, Ser. No. 166,930
Int. Cl. B60v 1/02
U.S. Cl. 180—124 49 Claims



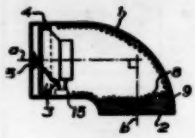
An annular sealing assembly comprising an annular inflatable hanger on the underside of a load-bearing base and an annular sealing means on the underside of the hanger confines a load-supporting air cushion that is continuously supplied with compressed air. The lower annular sealing means comprises a stack of resiliently deformable ring-shaped members with at least one flexible reinforcement ring incorporated therein to prevent radially outwardly ballooning of the annular sealing means and the annular sealing means is floatingly attached by a ring-shaped flexible member to a rigid ring-shaped plate on the underside of the hanger. Stability is promoted by supplying compressed air to the hanger continuously and continuously releasing air from the hanger. Noise is reduced by providing the underside of the annular sealing means with a flexible wear strip of lesser outside diameter than the annular sealing means.

3,768,589

LOUDSPEAKER

Lars-Goran Bernhard Nilsson, Dalby, and Bengt Jorgen Tyke Tykesson, Lund, both of Sweden, assignors to Jan Einar Bostedt, Lund, Sweden, by said Nilsson

Filed Apr. 3, 1972, Ser. No. 240,726
Claims priority, application Sweden, Feb. 29, 1972, 2475/72
Int. Cl. G10k *13/00*; H04r *1/28*
U.S. Cl. 181—31 B **10 Claims**



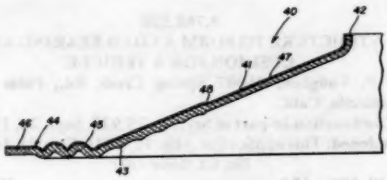
Loudspeaker with a cabinet in the form of a bent tube having a loudspeaker element at one end and a closure plate at the other end, whereby sound reproduction will be of very high quality although the tube is relatively small in size compared with conventional loudspeaker cabinets.

3,768,590

MOLDED LOUDSPEAKER DIAPHRAGM

Fred D. Yocum, Jack Oak St., Cassville, Wis.

Filed Sept. 23, 1971, Ser. No. 183,135
Int. Cl. G10k *13/00*; H04r *7/00*
U.S. Cl. 181—32 R **1 Claim**



A loudspeaker diaphragm is formed by dipping a suitably-shaped mold into a fibrous slurry. After drying, there is provided a diaphragm having a frusto-conical body and a flange arranged to be fixedly mounted. The diaphragm is then laterally compressed. When a driver mechanism is coupled to the smaller end of the body and is energized, the flange is repetitively flexed. The flange is capable of withstanding substantial and prolonged flexing by virtue of having been compressed during the construction thereof.

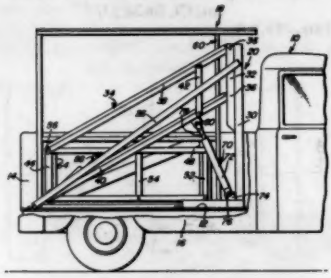
3,768,591

DOUBLE PARALLELOGRAM LINKAGE LIFT

James L. Stucky, Box 34, R.R. No. 1, Moundridge, Kans., and Ronald K. Stucky, 160 S. 160th E., Andover, Kans.

Filed Dec. 9, 1971, Ser. No. 206,458
Int. Cl. E04g *1/22*, *1/34*
U.S. Cl. 182—2 **4 Claims**

A lift including a base for support from a support surface, a generally horizontal load platform and a pair of parallel arms pivotally connected at one pair of corresponding ends to said base and at the other pair of corresponding ends to the load platform. Motor structure is connected between the base and the parallel arms for swinging the latter relative to the base and thus between arms and the platform for swinging the latter relative to the arms in a manner maintaining the platform



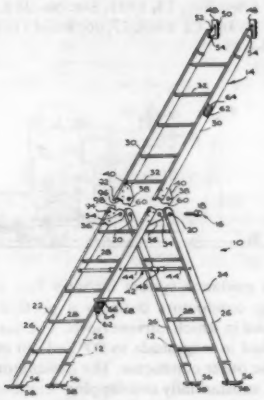
generally horizontally disposed throughout swinging movement of the arms relative to the base and the platform relative to the arms.

3,768,592

MULTI-PURPOSE LADDER ASSEMBLY

Leon G. Higgins, 5914 S. Fairfax, Los Angeles, Calif.

Filed June 7, 1972, Ser. No. 260,669
Int. Cl. E06c *1/18*
U.S. Cl. 182—22 **10 Claims**



An improved multi-purpose ladder assembly includes a collapsible stepladder portion, a lean ladder portion which may be extendable, and locking means such as pivot pins releasably pivotably interconnecting the two portions through aligned apertures in aperture-defining means adjacent the apex of the stepladder portion. Means are also provided for adjusting the length of the lean ladder portion while bracing the same against the stepladder portion. The assembly is readily collapsible to a compact storage postion while the components thereof remain interconnected.

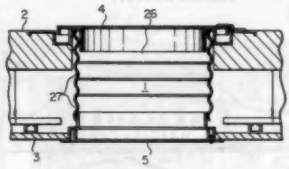
Means including pivotable upper brace plates may be provided for bracing the extension ladder portion and for releasably holding the pivot pins in place. Means may further be provided to releasably hold work articles, such as brushes and the like, adjacent the sides of either or both ladder portions.

3,768,593

INDOOR ESCAPE DEVICE

Hiromitsu Naka, No. 39, Oaza Shinmachi, Yashio-cho, Minami Saitama-gun, Saitama-ken, Japan

Filed Mar. 15, 1971, Ser. No. 124,034
Int. Cl. A62b 1/20
U.S. Cl. 182—77 4 Claims



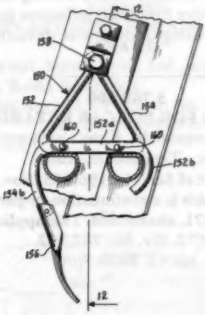
The present invention is directed to an indoor escape device which allows the evacuees to pass through a manhole in a slab by which two stories are separated thereby escaping swiftly to a safety story or zone one after another without going from the indoors to the outdoors.

3,768,594

GRAVITY LOCK FOR EXTENSION LADDERS

Hyman Kramer, c/o Hy Kramer Enterprise, Inc., 1457 Bassett Ave., Bronx, N.Y.

Filed July 10, 1972, Ser. No. 270,514
Int. Cl. E06c 7/06
U.S. Cl. 182—210 4 Claims



A gravity lock for extension ladders, said gravity lock comprising a pair of side struts and a cross-bar which are interconnected to form an A-frame, the lower ends of said side struts being bent inwardly toward each other to form rung-engageable hook elements. Where necessary, a flipper is attached to one of said hook elements. By changing the dimensions of the side struts and cross-bar and the angle between them, the gravity lock may be applied in different ways to different kinds and sizes of extension ladders. In one form of the invention, there is a single cross-bar and it is attached to the side struts; in another form of the invention, there are two cross-bars and each is integral with one of the side struts.

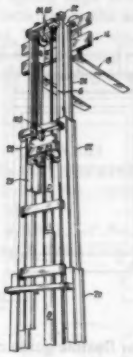
3,768,595

LIFT TRUCK MAST

Wilfred H. Kelley, Jr., Maple Plain, Minn., assignor to White Equipment Co., Hopkins, Minn.

Filed July 15, 1970, Ser. No. 55,064
Int. Cl. B66b 9/20
U.S. Cl. 187—9 10 Claims

A lift truck mast having extensible uprights received one within the other. Each upright includes a pair of rail members each of which has a web and flanges such that the members are I-shaped in cross section. The rail members are nested together with the web portion and end flanges of the inner overlapping the web portions and end flanges to the outer. The web portions of one rail member carry rollers which ride on the rear end flanges of the adjacent nested rail member. Each web portion, when viewed in cross section, provides a straight section of uniform thickness and a tapered portion gradually increasing in thickness toward the rear end flange. The rollers are spaced from, but mounted parallel to, the straight web portions so as to rotatably engage the rear end flanges and tangentially contact the tapered web portion. Forward mast bending loads are taken radially by the rollers and side thrust loads parallel to their axes of rotation for improved anti-friction properties and longer wear.

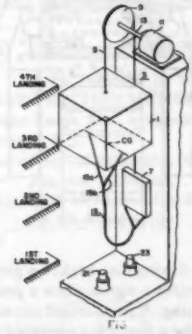


3,768,596

ELEVATOR COMPENSATION CHAINS

Frederick Solymos, Glenridge, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 18,187, March 10, 1970, abandoned.
This application Mar. 31, 1972, Ser. No. 240,241
Int. Cl. B66b 11/04
U.S. Cl. 187—21 4 Claims



Resilient spacers provided for alternate links of an elevator compensation chain maintain the links fully extended thereby eliminating chain rattle. The cross-sectional dimensions of the spacers exceed those of the chain links to eliminate noise which would result from the links striking components in the hoistway. Y type connections to the car and counterweight permit the use of a single compensation chain without interference with the buffers.

3,768,597

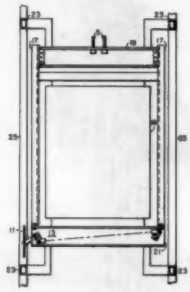
ELEVATOR FLEXIBLE GUIDE CLAMP SAFETY

Richard H. Darwent, East Orange, N.J., and Anthony F. Watkoskey, deceased, late of Somerville, N.J. (by Lorraine M. Watkoskey, surviving spouse), assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 18, 1971, Ser. No. 172,684

Int. Cl. B66b 5/16

U.S. Cl. 187—88 **8 Claims**



In a compact elevator flexible guide clamp safety, the brake gibs are lifted into engagement with the guide rail by an operating member which extends transversely through the lever arms of the clamp. The mountings for the brake spring connected between the opposite ends of the lever arms provide separate adjustment for jaw opening and spring loading.

3,768,598

SIGNAL INDICATOR FOR RAILWAY VEHICLES HAVING DISC BRAKES

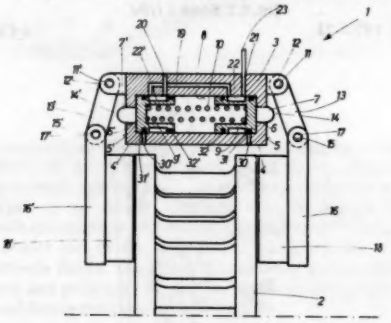
Hans Pollinger, Munich and Ernst Blaut, Minden, both of Germany, assignors to Knorr-Bremse G.m.b.H., Munich, Germany

Filed Apr. 4, 1972, Ser. No. 241,022

Claims priority, application Germany, Apr. 29, 1971, P 21 21 162.1

Int. Cl. F16d 66/02

U.S. Cl. 188—1 A **8 Claims**



A railway vehicle having disc brakes is provided with an indicator which generates a signal when a predetermined wear occurs in a brake lining. A pressurized circuit including an indicator for generating a signal is connected to a housing centrally located at the periphery of the brake disc. The housing has control valves therein which control connection of the signal indicator with the atmosphere and with a source of pressure. The valves are actuated by sensor links pivotally connected to the housing and to brake lining holders so that upon the occurrence of a predetermined wear in a brake lining the sensor links engage actuation stems on the valves and cause the valves to disconnect the signal indicator from the source of pressure and connect the signal indicator to the atmosphere whereby a signal is generated.

3,768,599

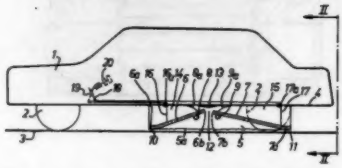
METHOD AND MEANS FOR ADDITIONALLY IMPROVING THE STABILITY AND TRACTION OF VEHICLES ESPECIALLY IN BRAKING

Pierre Alexandre, 27 rue Lepic and Renee Lezy, 42 rue de Cronstadt, both of Paris, France

Continuation-in-part of Ser. No. 162,582, July 14, 1971, abandoned. This application Feb. 14, 1972, Ser. No. 226,155

Int. Cl. B60t 1/14

U.S. Cl. 188—5 **33 Claims**



The stability to the ground and road-hugging, tractive capability and efficiency of vehicles, especially automobiles and particularly during braking, is materially increased and improved by a method and means operable during braking and deceleration of the vehicle whereby and wherein an air scoop or air collecting and gathering depression chamber or device comprised of at least one movable flap which is positioned towards the rear end of the vehicle and against the direction of travel is lowerable downward from the floorboard of the vehicle toward the ground so that, in combination with associated and integral means, a vacuum or suction effect is tended to be created and made between the bottom of the vehicle and the ground or roadbed over which it is traveling in order to result in and provide a positive force and influence to keep the vehicle from skidding, twisting or otherwise deviating in its course over the roadbed.

3,768,600

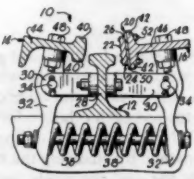
SILENCER FOR BOXCAR RETARDERS

George W. Beck, Tonganoxie, Kans., assignor to The Safety Skate Company, Inc., Tonganoxie, Kans.

Continuation-in-part of Ser. No. 196,665, Nov. 8, 1971, Pat. No. 3,716,114, which is a continuation-in-part of Ser. No. 143,528, May 14, 1971, abandoned. This application Aug. 21, 1972, Ser. No. 282,342

Int. Cl. B61k 7/06

U.S. Cl. 188—62 **11 Claims**



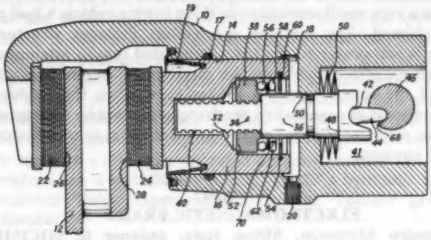
A silencing structure is provided for use with a railcar retarder of the kind which includes a pair of opposed, wheel-gripping, elongated jaws, the silencer effectively preventing the screeching noises that normally occur when the metallic wheels of the railcar pass between the opposed jaws. The silencer is comprised of a series of elongated ribs mounted on and extending longitudinally along one of the jaws and are arranged in a plurality of banks which are disposed to be in engagement with the wheels as the latter roll along the retarder. The banks of ribs are spaced relative to one another such that the wheels do not remain in contact with any one of the ribs a sufficient length of time for vibrations to develop which have a frequency great enough to produce the irritable screech normally associated with railcar retarders.

3,768,601

DISC BRAKE AND ADJUSTING DEVICE THEREFOR

Philippe Bejot, Paris France, assignor to Societe Anonyne D.B.A.

Filed Jan. 10, 1972, Ser. No. 216,353
Claims priority, application France, Jan. 12, 1971, 7100748
Int. Cl. F16d 65/56
U.S. Cl. 188—71.9 8 Claims



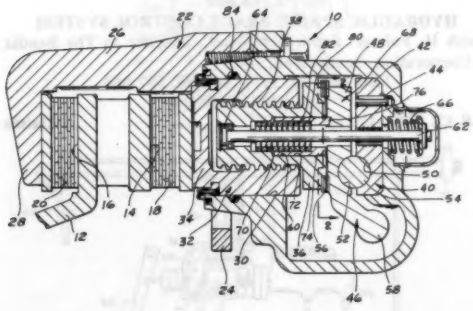
A caliper disc brake assembly includes an adjuster mechanism for maintaining the proper clearance between the brake shoes and the disc. The adjuster comprises two interconnecting elements and a member to permit one element to follow the movement of the piston in the brake actuating mechanism. A hollow ring filled with a compressible material such as pressurized gas is effective to retard or momentarily stop the movable element in the adjuster. Over-adjustment due to "panic stops" is thereby prevented.

3,768,602

APPLICATION ADJUSTER FOR AIR-ACTUATED DISC BRAKE

Richard T. Burnett, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Apr. 13, 1972, Ser. No. 243,794
Int. Cl. F16d 65/56
U.S. Cl. 188—71.9 11 Claims



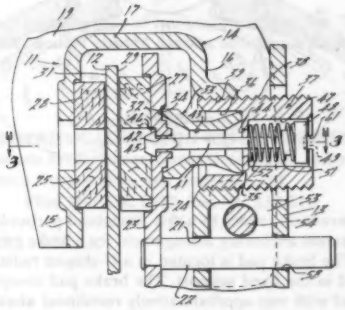
A mechanically actuated disc brake is disclosed which includes the usual caliper slidably mounted on a torque member. The caliper exerts braking pressure on a pair of friction elements to drive the latter into frictional engagement with the disc or rotor. The brake is actuated by rotation of a lever mounted within the caliper to drive spherical force transmitting elements up ramps which are provided in the lever and in the wall of the caliper to urge the lever axially within the caliper. Axial movement of the lever is transmitted to one of the friction elements through an extendible member comprising the usual piston which is threadedly connected to an adjusting screw, which extends from the piston upon relative rotation between the screw and the latter. A one-way clutch spring interconnects the lever and the adjusting screw so that, after predeterined arcuate movement of the lever, further rotation of the lever rotates the screw with respect to the piston, causing the screw to extend from the latter to thereby maintain the retraction of the friction elements to a predetermined substantially constant amount. The clutch spring grippingly interconnects the lever and the adjuster screw until a predetermined torque is applied to the clutch spring, whereupon the clutch spring slips relative to the screw to prevent rotation of the latter when the actuating force exceeds the predetermined level. Therefore, the adjuster is inherently self-compensating, thereby preventing over-adjustment in the brake when usually large actuating forces are applied to the latter.

3,768,603

TILTING PIN WITH SPRING RETURN

Neil R. Hoffman, Saukville, Wis., assignor to Kelsey-Hayes Company, Jomulus, Mich.

Filed Dec. 6, 1971, Ser. No. 205,060
Int. Cl. F16d 55/224
U.S. Cl. 188—72.3 5 Claims



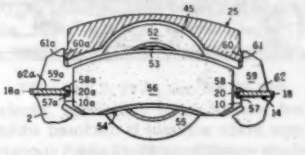
A disk brake assembly embodying a tilting type actuator that is pivoted for actuating the brake pads into engagement with the associated rotor. An improved return spring arrangement is incorporated that permits a compact assembly. The return spring includes a pin that extends through the tilting actuator and which is operatively engaged with one of the brake pads. A spring acts on this pin and biases the brake pad to its retracted position.

3,768,604

DISC BRAKE AND FRICTION MEMBER STRUCTURE

Edward J. Falk, Saint Louis, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Continuation of Ser. No. 752,694, Aug. 14, 1968, Pat. No. 3,536,166.
Filed Oct. 20, 1970, Ser. No. 82,332
Int. Cl. F16d 65/04
U.S. Cl. 188—73.3 16 Claims



A spot disc brake having support means defining a fixed closed loop member substantially about a chordal portion of a rotatable disc, and a cylinder portion slidably anchored on

said closed loop memer adjacent one side of said disc and including a caliper portion extending over said disc chordal portion and slidably anchored on said closed loop member adjacent to the other side of said disc for moving a pair of opposed friction members into frictional engagement with said one and other sides of said disc at the chordal portion thereof. At least one of the friction members is provided with anchoring extensions embracing the caliper for transmitting braking torque thereto, and each anchoring extension having a supporting portion for engagement with the loop member to oppose deflection thereof.

3,768,605

DISC BRAKE WITH ANTI-VIBRATION ANCHORING ARRANGEMENT

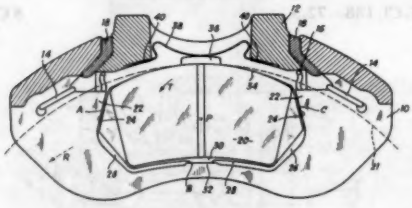
Jean-Jacques Carre, 100 Avenue des Present Wilson, Montreuil/Bois, France

Filed May 4, 1972, Ser. No. 250,264

Claims priority, application France, May 26, 1971, 7119081

Int. Cl. F16d *65/00*

U.S. Cl. 188—73.5 **1 Claim**



The invention relates to a disc brake and particularly to an anti-vibration anchoring arrangement for a brake pad in a disc brake. The brake pad is located in a U-shaped radial opening provided in the fixed support. The brake pad co-operates on one hand with two approximatively rectilinear abutments inside this opening and converging towards the outside of the latter, and on the other hand with a boss located at the bottom of said opening. When the brake is actuated, the brake pad is locked by three points by tilting in its plane around one of these points and the possibilities of vibrations are reduced.

3,768,606

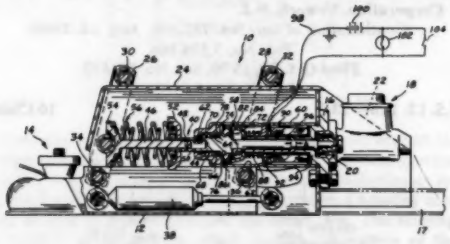
SURGE BRAKE WITH SOLENOID-ACTUATED MASTER CYLINDER LOCK AND EMERGENCY RELEASE

Walter J. Mizen; Richard L. Lewis, and Richard T. Hendrickson, all of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed June 29, 1972, Ser. No. 267,300

Int. Cl. B60t *7/20*

U.S. Cl. 188—112 **10 Claims**



A surge-type brake actuator is disclosed which includes a pair of relatively movable members which cooperate with one another to apply the brakes of a towed vehicle when the towed vehicle moves relative to the towing vehicle when the brakes of the latter are applied. The actuator includes a preloaded spring which cooperates with one of the members to urge the latter relative to the other member, and a latching mechanism which normally prevents the spring from generating this relative movement. The latching mechanism is controlled by a solenoid actuator which is wired to the towing vehicle's stop light switch so that the latching mechanism is released whenever the operator of the towing vehicle initiates a brake application. A manual control may also be provided in the operator's compartment of the towing vehicle so that the solenoid actuator may also be controlled at the discretion of the driver to permit the preloaded spring to apply the towed vehicle's brakes a very small amount even if the towing vehicle's brakes are released. The latching mechanism includes structure which is responsive to the force generated due to attempted relative movement between the members to permit application of the towed vehicle's brakes even when the latching mechanism is engaged when the force generated by attempted relative movement between the vehicles exceeds a predetermined amount.

3,768,607

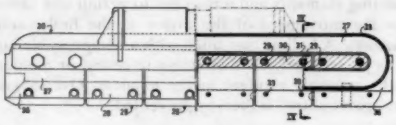
ELECTROMAGNETIC BRAKE

Alessandro Marzocco, Milan, Italy, assignor to SOCIMI-Societa Costruzioni Industriale Milano S.p.a., Milan, Italy

Filed Apr. 29, 1971, Ser. No. 138,683

Int. Cl. F16d *65/34*

U.S. Cl. 188—165 **3 Claims**



An electromagnetic brake is disclosed in which the connection between adjacent padlike braking members is obtained with a particular kind of hinged connection. More particularly, a semicylindrical projection of a pad cooperates with a corresponding hollow formed in the adjoining padlike member. The component parts are so arranged that the replacement of a padlike member is accompanied by the replacement of the hinged connection also.

3,768,608

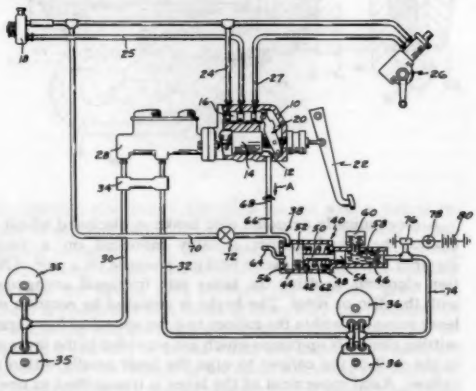
HYDRAULIC SPRING BRAKE CONTROL SYSTEM

Keith H. Fulmer, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Jan. 20, 1971, Ser. No. 107,966

Int. Cl. F16d *65/24*

U.S. Cl. 188—170 R **9 Claims**



A vehicle hydraulic braking system is disclosed which includes a hydraulic brake booster which operates a standard

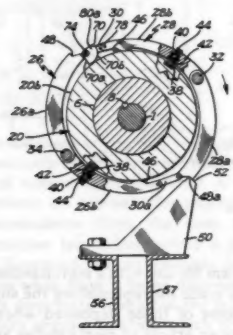
automotive master cylinder. Disc brakes which include a hydraulic service actuator and spring-applied parking actuator are mounted on at least two of the wheels of the vehicle. Pressurized fluid from a hydraulic source, such as the vehicle's power steering pump, is used to operate the brake booster when a service brake application is effected. The spring actuator on each of the disc brakes includes a pressure responsive device that opposes the resiliency of the springs. Fluid is communicated from the booster pressure chamber to the pressure responsive device when the engine of the vehicle is started and the first brake application is effected to release the spring actuator. A control valve is provided so that fluid may be purged from the pressure responsive means when the vehicle is parked or when an emergency occurs. The fluid pressure from the booster pressure chamber is communicated to a pressure intensifier which increases the fluid pressure level that is provided to the pressure responsive means. The pressure intensifier includes a manually operated device to release the spring brake when a malfunction in the vehicle' s hydraulic system prevents fluid communication to the booster pressure chamber.

3,768,609

LOCK DEVICE FOR ELEVATOR SAFETY BRAKE

Marvin R. Laing, Elk River, Minn., assignor to Humphrey Elevator and Truck Company, Faribault, Minn.

Continuation-in-part of Ser. No. 132,283, April 8, 1971, which is a continuation-in-part of Ser. No. 83,703, Oct. 26, 1970.
This application July 24, 1972, Ser. No. 274,736
Int. Cl. F16d *59/00*
U.S. Cl. 188—184 8 Claims



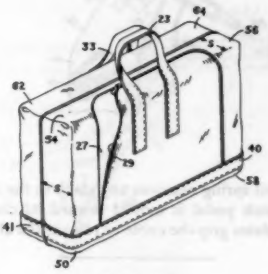
A safety brake mechanism mounted on a rotary drive shaft of an elevator incorporates a centrifugally actuable strike element pivotally shiftable to a stop position to engage a stationary stop member under the influence of centrifugal force at a predetermined maximum rotational speed of the drive shaft. A lock cam rotatably attached to the strike element bears against the outer periphery of an annular brake member on which the strike element is mounted for rotation with the drive shaft, and when the strike element shifts to said stop position, a torsion spring rotates the lock cam into a locking position between the strike element and the outer periphery of the brake member to hold the strike element in its stop position against the stationary stop member.

3,768,610

PILLOW-PAK CARRYING CASE

Richard W. Housel, New Hope, Pa., assignor to Atlantic Products Corporation, Trenton, N.J.

Filed Mar. 2, 1972, Ser. No. 231,129
Int. Cl. A45c *13/26*
U.S. Cl. 190—43 3 Claims



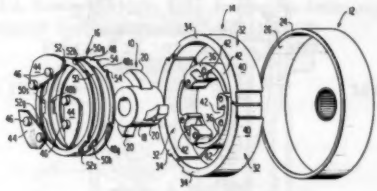
Improved carrying case of two piece construction. The case includes four double pleated corners which provide structural stability.

3,768,611

CENTRIFUGAL CLUTCH WITH C-SPRINGS

Robert Eugene Frederickson, South Gate, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Mar. 28, 1972, Ser. No. 238,810
Int. Cl. F16d *43/14*
U.S. Cl. 192—105 BA 8 Claims



A centrifugal clutch mechanism comprising a drive member, a driven member and a plurality of centrifugally actuatable clutch shoes connected to the driving member and radially engageable with the driven member. A plurality of C-shaped springs are circumferentially mounted about the clutch shoes to maintain the shoes in a retracted posture when the driving member is idle. The plurality of C-shaped springs are positioned about the clutch shoes with open portions of the C-shaped springs staggered in order to provide a balanced restraining force on the clutch shoes.

3,768,612

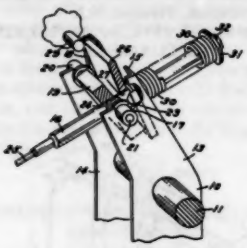
SELF-ADJUSTING CLUTCH RELEASE MECHANISM

Ronald John Gale, Kineton, Green Glades, Hornchurch, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 7, 1970, Ser. No. 95,646
Claims priority, application Great Britain, Jan. 13, 1970, 1,504/70
Int. Cl. F16d *13/60*
U.S. Cl. 192—111 A 3 Claims

A self-adjusting clutch release mechanism having a clutch release cable and a clutch pedal. The pedal carries a locking plate and a guiding plate that slidably engage the end of the

cable. When the clutch pedal is in its position corresponding to clutch engagement, the plates are disengaged from the



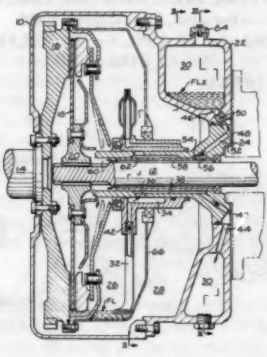
cable and a coil spring removes any slack in the cable system. When the clutch pedal is moved toward its clutch released position, the plates grip the cable to release the clutch.

3,768,613

FLUID CLUTCH HOUSING

Gerald F. Brunner, Kirtland, Ohio, assignor to Towmotor Corporation, Cleveland, Ohio

Filed Sept. 10, 1971, Ser. No. 179,283
Int. Cl. F16d *13/74*
U.S. Cl. 192—113 B 8 Claims



A wet-type, friction-disc clutch having an internal, fluid control distribution and reservoir system which provides lubrication and cooling fluid for the clutch discs, and which is self-priming and nonsiphoning and will limit drain back from the reservoir to the rotative members when the clutch members are not rotating. All the component members of the system are located within the confines of the clutch housing, thus a simple and compact unit with no external fluid connections is provided.

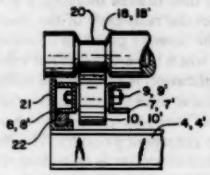
3,768,614

CONVERTIBLE ROLLER WAY CONVEYOR

Charles P. Tabler, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio

U.S. Cl. 193—37 9 Claims

The roller way conveyor system of the present invention provides for the transport of articles supported on two inclined runs of freely rotatable horizontal axis rollers from one end to the other end, and the conveying of articles unsuited for support between the roller runs on a plurality of pipes freely supportable on and extending between the roller runs. Preferably, the pipes and rollers are freely journaled to provide solely for gravity conveying of articles carried thereon, and axial restraint means or confining means are provided to limit the axial movement of the pipes when supported on the rollers and to correspondingly limit the axial movement



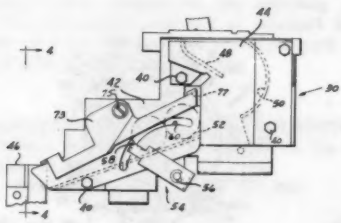
of articles supported on either the rollers or pipes. The rollers are equipped with elastomer tires having hysteresis properties so that there will be a controlled speed for conveyed articles, an accommodation of uneven article surfaces, quieter operation, and a firm adapting support of the pipes.

3,768,615

COIN MECHANISM WITH TWO-NICKEL CHANGE REPLENISHER AND ELECTRICAL COIN RETURN

Albert Kurimsky, Dover, N.J., and William Rosenhagen, Ossining, N.Y., assignors to Rowe International Inc., Whippany, N.J.

Filed Nov. 24, 1970, Ser. No. 92,429
Int. Cl. 194 *10*; G07d *1/00*
U.S. Cl. 194—2 17 Claims



A coin mechanism for use with a merchandising machine in which provision is made for replenishing the supply of change coins with two coins of those deposited when the machine operates to deliver an article of merchandise and in which an electrically-driven coin return mechanism returns the deposited coins to the customer in the event that he changes his mind about making a purchase before having operated a selecting button.

3,768,616

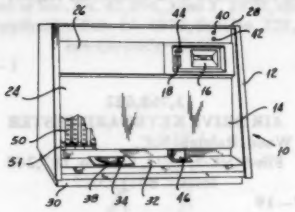
BILL AND COIN CHANGER

David B. Dykehouse, Muskegon; Oliver G. Okkonen, and Norman J. Zoodsma, both of Grand Rapids, all of Mich., assignors to Rowe International, Inc., Whippany, N.J.

Division of Ser. No. 887,063, Dec. 22, 1969, Pat. No. 3,690,332. This application Sept. 17, 1971, Ser. No. 181,586
Int. Cl. G07f *1/06*
U.S. Cl. 194—4 R 3 Claims

A machine for changing currency such as bills or coins of larger denomination for change in the form of coins of a lower

denomination. When a bill is to be changed, a settable group of coin ejectors is operated. When a coin is to be exchanged,



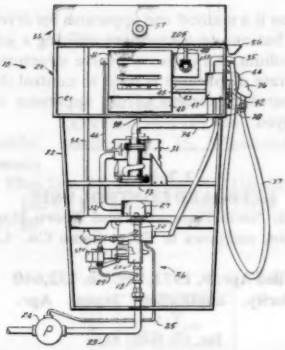
for example a 50-cent piece, other groupings of coin ejectors are operated in combinations which can be varied at the option of the machine service personnel.

3,768,617

CHANGE CALCULATING COIN-RETURN SYSTEM

Robert B. Young, Buena Park, Calif., assignor to Pan Nova, Inc., Santa Fe Springs, Calif.

Filed Dec. 6, 1971, Ser. No. 204,833
Int. Cl. G07f 13/02
U.S. Cl. 194—13 8 Claims



A fluid-dispensing unit is operable to dispense fluid up to or less than a presettable amount and includes a coin-storage for storing coins of various denominations. A plurality of coin payout mechanisms are provided for paying out coins of the different denominations from the coin storage when a dispensing operation terminates before a preset amount of fluid has been dispensed. Means rotatably drive a plurality of registering cams while fluid is being dispensed from the unit. At the end of a dispensing operation the registering cams assume a stationary angular position which provides an analog indication of change to be returned. Stationary switches operated by the registering cams provide an ON/OFF or digital indication of change to be returned. Means are provided for energizing the coin payout mechanism in accordance with the digital indication provided by the stationary switches, operated by the registering cams.

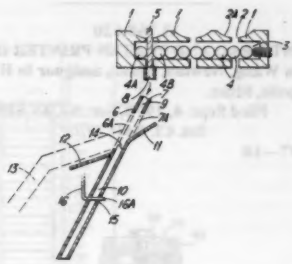
3,768,618

COIN-REJECTING DEVICE

Terence John Collins, Redhill, England, assignor to Tiltman Langley Limited, Surrey, England

Filed Sept. 17, 1971, Ser. No. 181,315
Claims priority, application Great Britain, Sept. 3, 1970, 42,261/70
Int. Cl. G07f 3/02
U.S. Cl. 194—102 2 Claims

The invention described is of coin-rejecting means and secondary features associated therewith; the rejecting means is of the type in which the coin after slot insertion passes down a chute which is inclined in two planes so that the coin leans against one wall. In that wall is a window of which the other margin is so spaced from the floor of the chute that a coin of insufficient diameter topples through the window and as a result is rejected; whilst a coin which is of acceptable diameter but is unacceptably thin drops down into a channel of the floor



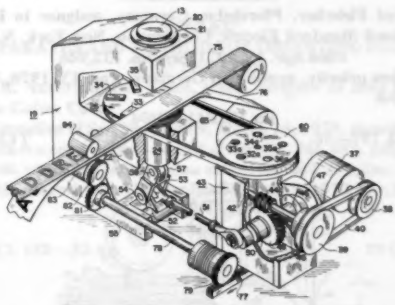
and thus drops clear of the upper margin of the window this again resulting in rejection. The invention further includes means whereby a second coin slotted too hastily after a first is refused admission through the slot; means whereby coins passing operationally through the chute can be held back until the function of a first coin of a sequence has been completed; and means whereby a coin jammed in a chute may be ejected for recovery.

3,768,619

DIRECT IMAGE COMPOSING MACHINE HAVING MEANS TO PREVENT PRESSURE OVERLOAD OF PRINTING CHARACTERS

Richard A. Lewis, Wickliffe, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Dec. 29, 1971, Ser. No. 213,273
Int. Cl. B41j 1/22
U.S. Cl. 197—6.4 10 Claims



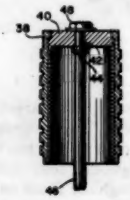
A direct image printing machine is provided especially adapted for composing a line of print on paper tape. The machine prints images from raised characters and coated transfer paper, such as carbon coated paper, onto a printable paper strip when these elements are stacked together and commonly compressed between a linearly closing anvil and piston. The machine may be used with a wide range of type style and sizes of raised characters. A control system regulates the force of the thrust during the printing process to guard against pressure overload on characters of a particular type or size. One of a series of flat platens of differing thicknesses is selectively used between the anvil and piston to control interference, the thickness of a selected platen member being correlated with the surface image area of a selected raised

character during a printing operation is maintained below a predetermined maximum. Additionally, the printing machine is designed to accept only a master or printing disc having raised characters of an area to be used with a selected platen member and to reject other printing discs. The printing disc preferably is formed from a deformable, resilient, elastic, synthetic polymeric resin having raised characters of different areas.

3,768,620
PRINT HEAD AND PLATEN PRINTER DEVICE

Cheng-Hua Wang, Newton, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 4, 1970, Ser. No. 69,829
Int. Cl. B41j *23/04*
U.S. Cl. 197—18 **6 Claims**

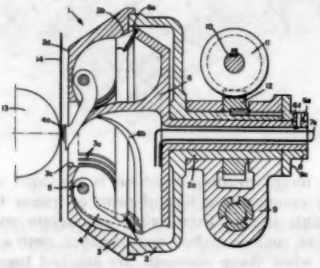


A novel print head and platen configuration for a high speed printer is disclosed wherein the print head is a hollow cylindrical shape fabricated from a material which is measurably softer than the material used in the platen assembly. The print head is easily removable from its supporting structure. The hard platen has an appreciably long life and together with the print head assembly markedly improves on the print definition of the underlying printed copies.

3,768,621
PRINTING MECHANISM FOR SERIAL DATA RECORDING

Manfred Fleischer, Pforzheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 12, 1971, Ser. No. 132,946
Claims priority, application Germany, Apr. 13, 1970, P 20 17 629.8
Int. Cl. B41j *23/04*
U.S. Cl. 197—18 **7 Claims**

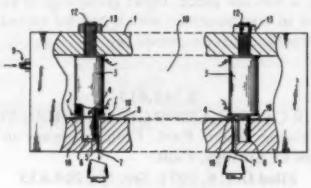


A serial printing mechanism with a constantly rotating type lever assembly in which the type lever selected for printing performs, within a predetermined angular range, a printing movement directed towards the axis of rotation. The type lever assembly in the form of a rim-shaped magazine rotates immediately in front of the printing point, the axis of rotation extending vertically to the printing point. The respective type lever selected for printing performs a printing movement directed inwardly towards the axis of rotation. Approaching said axis of rotation asymptotically, printing is effected exactly on the axis of rotation or in its immediate vicinity.

3,768,622
AIR DRIVE KEYBOARD TESTER

Dyrl Gower Wood, Raleigh, N.C.

Filed Oct. 7, 1971, Ser. No. 187,240
Int. Cl. B41j *23/22*
U.S. Cl. 197—19 **5 Claims**

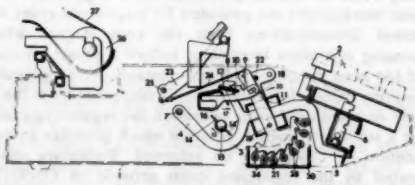


The invention is a method and apparatus for driving or exercising keys or buttons on a keyboard utilizing a jet of fluid as the driving medium. An improved valve structure utilizing a flexible, perforate diaphragm is used to control the fluid jets and is the operative portion of the apparatus used in the method employed.

3,768,623
KEYBOARD CONTROL UNIT

Tetsuma Asahi; Norio Hasegawa, and Kaoru Hozumi, all of Tokyo, Japan, assignors to Silver Seiko Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1971, Ser. No. 132,640
Claims priority, application Japan, Apr. 11, 1970, 45/30494
Int. Cl. B41j *5/30*
U.S. Cl. 197—19 **18 Claims**



A keyboard control unit in a data applying machine for controlling a data applying mechanism for applying data to a data carrier which comprises a plurality of first elements provided on a key-operated member and a plurality of second elements connected to said data applying mechanism, at least one of the element groups being manually displaceable in an engageable position and in an unengageable position with the other. With such a keyboard control unit, the control of the data applying mechanism can be effected through a mechanical engaging relations between the first and the second elements and varying of said control can be easily effected by varying said engaging relation according to a code system of a data reading machine employed.

3,768,624

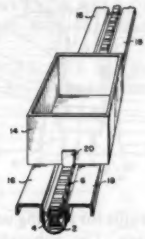
ELASTIC BELT CONVEYOR

Andrew T. Kornylak, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio

Continuation of Ser. No. 42,094, June 1, 1970, abandoned. This application Feb. 11, 1972, Ser. No. 225,599

Int. Cl. B65g *15/60*

U.S. Cl. 198—1 4 Claims



A belt type conveyor for transporting loads. A tube is formed with a track in one surface to support and guide an endless belt. The return run is carried in the tube. The outer surface of the belt is engaged with the load to propel it from one station to another.

3,768,625

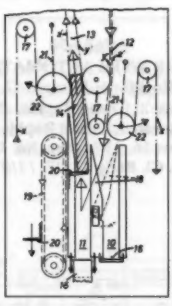
CONVEYOR SYSTEM

Erich Schneider, Sterneckberg 15, Wiesensteig, Wurttemberg, Germany

Filed Dec. 21, 1971, Ser. No. 210,429

Int. Cl. B65g *47/00, 37/00, 15/14*

U.S. Cl. 198—20 8 Claims



A conveyor system is disclosed for transporting articles to preselected destinations, in which a generally horizontal conveyor having forward and return runs is located between synchronously moving endless conveyor belts defining vertically moving upward and downward conveyor flights therebetween. Each article is provided with a destination address and means are provided between the forward and return runs of the horizontal conveyor for diverting an article moving downwardly between the downward runs of the vertical conveyors to either the forward or return run of the horizontal conveyor, in response to the destination address on the article. In addition, a lifting conveyor is provided adjacent one of the runs of the horizontal conveyor to lift an article located on that run to the upwardly moving flights of the vertical conveyors.

3,768,626

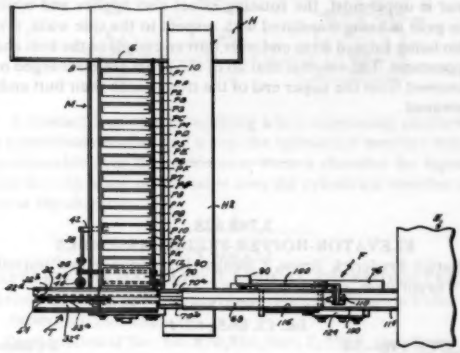
APPARATUS FOR CONVEYING MATERIALS

Richard G. Vossler, Lexington, and William E. Brock, Norwood, both of Mass., assignors to Eastern Refractories Co. Inc., Belmont, Mass

Filed Dec. 22, 1971, Ser. No. 210,807

Int. Cl. B65g *37/00*

U.S. Cl. 198—26 6 Claims



Workpieces such as metal billets and various other small metal parts are handled in bulk form and conveyed from a loading station into a heating furnace or other processing unit by means of a conveyor mechanism of the elevator class commonly referred to as a ram-type loader. Travel of the workpiece along the conveyor mechanism is controlled in an improved manner and regulated by means of a special billet-feeding apparatus. The feeding apparatus is arranged to cooperate with the conveyor mechanism and provide intermittent feeding at a predetermined rate of advancement which may be limited by required processing conditions within the heating furnace.

3,768,627

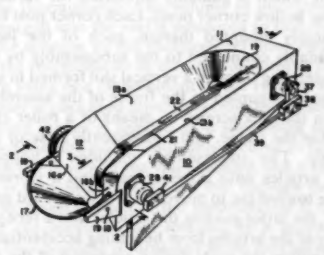
APPARATUS AND METHOD FOR ORIENTING PEARS AND THE LIKE

Earl R. Anderson, Los Gatos, Calif., assignor to Brex Corp., Los Gatos, Calif.

Continuation of Ser. No. 20,989, March 19, 1970, abandoned, which is a continuation-in-part of Ser. No. 746,457, July 22, 1968, which is a continuation of Ser. No. 602,759, Dec. 20, 1966, abandoned. This application June 5, 1972, Ser. No. 259,478

Int. Cl. B65g *47/24*

U.S. Cl. 198—33 AA 10 Claims



Apparatus and method for orienting pears and similar articles in which an inclined trough support is provided by op-

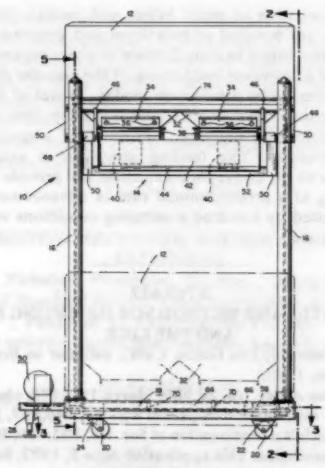
positely disposed upwardly diverging side walls which are closed at their lower or feed ends by a continuous upwardly concave surface forming a smooth continuation of each of the respective side walls of the trough. The side walls of the trough are spaced apart at the bottom to receive the upper stretch of a belt disposed between these side walls and which travels uphill to apply an upwardly progressing and rotating effect to a pear which is translated with respect to the support. When the pear has its bulb end uppermost, the only effect on the pear is the progressing effect as the angle represents an angle of repose in this position of the pear. If the stem end of the pear is uppermost, the rotating effect also applies and while the pear is being translated with respect to the side walls, it is also being rotated stem end over butt end to place the butt end uppermost. The result is that all of the pears are discharged or removed from the upper end of the trough with their butt ends foremost.

3,768,628

ELEVATOR-HOPPER-FEEDER-ASSEMBLY

Charles Frederick Bross, Chicago, Ill., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Mar. 27, 1972, Ser. No. 238,597
Int. Cl. B65g *65/44*
U.S. Cl. 198—54 6 Claims



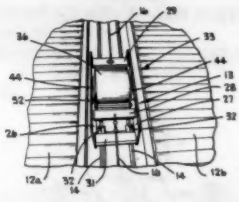
An elevator-hopper-feeder assembly has a hopper-feeder subassembly which is guidably supported for vertical movement by four hollow corner posts. Each corner post has a jack-screw rotatably mounted therein, each of the jack-screws being threadably connected to the subassembly by means of brackets extending through a vertical slot formed in each post. A prime mover mounted to the frame of the assembly is utilized to turn the jack-screws by means of a roller chain supported within the frame, and consequently raise or lower the subassembly. The subassembly includes a hopper which discharges articles onto a feeder pan, and a vibrator which vibrates the toward the to move the articles toward an inclined feed chute, the latter guiding the articles into a receptacle. To prevent any of the articles from becoming accidentially lodged or trapped within the posts during operation of the assembly, the structure confined within the posts is formed to have inclined surfaces which permit any articles entering the posts to slide outwardly toward the slots.

3,768,629

UNIT LOAD CONVEYING APPARATUS

Harry L. Bennett, and Richard E. Stockton, both of Indianapolis, Ind., assignors to Economation Inc., Indianapolis, Ind.

Filed Sept. 5, 1972, Ser. No. 286,459
Int. Cl. B65g *28/05*
U.S. Cl. 198—110 22 Claims



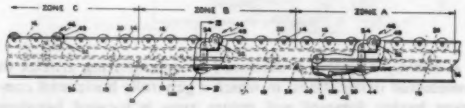
Disclosed is an apparatus for moving unit loads along an unpowered roller conveyor. The apparatus includes a drum, moved by power means along the conveyor path, and which engages and, in effect, attaches itself to the load when moving in one direction and engages but slips past the load, without attaching itself, when moving in the other direction. The drum is mounted for angular movement about an axis offset from the central axis of the drum so that when the drum, moving in one direction as a result of a horizontal force applied to it, engages the load, the force moment applied to the angular movement-axis of the drum merely swings the drum angularly away from the load and, when the drum is moved in the opposite direction, tends to swing the drum angularly toward the load, this resulting wedging action tending to lift the load and decrease the normal pressure acting between the load and the adjacent support surface, such as the conveyor rollers. When this normal force, multiplied by the coefficient of friction between the load surface and the support surface, is overcome by or falls below (as a result of the lifting action) the horizontal force applied to the drum, the drum will move the load horizontally. By controlling the travel of the drum along the length of the roller conveyor, a series of unit loads can thus be moved, sequentially or one-by-one, along the conveyor.

3,768,630

ACCUMULATOR WITH AUTOMATIC OVERRIDE

Russell A. Inwood, Rockford; Edward G. Malone, Wyoming, and Hardol Van Asselt, Grand Rapids, all of Mich., assignors to Rapistan Incorporated, Grand Rapids, Mich.

Filed Nov. 16, 1971, Ser. No. 199,282
Int. Cl. B65g *13/07, 13/071*
U.S. Cl. 198—127 R 7 Claims



This invention relates to a powered roller accumulator conveyor having a powered propelling member passing through a plurality of independent accumulating zones arranged along the conveyor. The propelled member is shiftable between driving and non-driving positions with respect to the powered rollers by means of vertically shiftable supporting rollers operated by pneumatically powered actuators. Each of the actuators are controlled by means of a series of valves connected to a source of fluid pressure. In an accumulating position, each of the actuators are connected through an article detecting

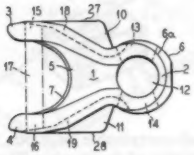
sensor-operated valve to the source of fluid pressure. In an override or discharge position, shuttle valves associated with each actuator are series connected to the source of fluid pressure through a main control valve and are operative to direct the flow of fluid from the sensor operated valve to energize each of the actuators in each of the zones to shift all of the operating zones into driving position.

3,768,631

CONVEYOR BELT CHAIN

Ejvin Janne Ragnvald Wahren, Mastargrand 4, Vadstena, Sweden

Filed Nov. 12, 1971, Ser. No. 198,157
Int. Cl. B65g *17/06*
U.S. Cl. 198—189 **3 Claims**



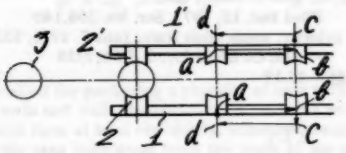
A conveyor is constructed as a series of links which directly carry the articles to be conveyed, each link including a head portion from which extends a pair of bifurcated legs for receiving and being coupled to the head portion of an adjacent link, the link further comprising a carrier portion that is integral with the head portion and the legs, the upper side of the carrier portion being a continuous flat transport surface overlying the head portion and the legs, the transport surface at one end being defined by the upper periphery of the head portion, the opposite end of the carrier portion being a web interconnecting the legs and having a concave edge corresponding in shape to the periphery of the head portion, the carrier portion further including a pair of side flange portions which extend longitudinally from the extremities of the legs and laterally to the head portion and which define the longitudinal edges of the continuous flat transport surface.

3,768,632

BLANK FEED DEVICE IN A TRANSFER PRESS

Naonori Taniguchi, Sagamihara, Japan, assignor to Aida Engineering Ltd., Sagamihara-shi, Kanagawa-ken, Japan

Filed Dec. 30, 1971, Ser. No. 214,336
Int. Cl. B65g *24/05*
U.S. Cl. 198—218 **4 Claims**



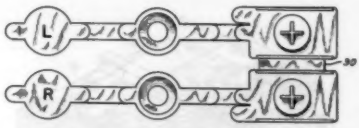
A blank feed device in which there is provided a pair of feed bars each having a plurality of grippers and connected together by a cross plate having elongated slots by means of pins which are slidingly received in said slots, a pair of links pivoted at one end to said pins, a common coupling member pivotally supporting the other ends of said links, a reciprocating means integrally connected at one end to said coupling member, a pinion rotatably supported at the other end of said reciprocating means, a stationary rack engaging one side of said pinion, a movable rack engaging the other side of said pinion and a pusher fixedly mounted on said movable rack.

3,768,633

CONTACT LENS CASE

David L. Nathan, Maplewood, N.J., assignor to Opticase Inc., Rockaway, N.J.

Filed Jan. 3, 1972, Ser. No. 214,678
Int. Cl. A45c *11/00*; B65d *85/30*
U.S. Cl. 206—5 A **6 Claims**



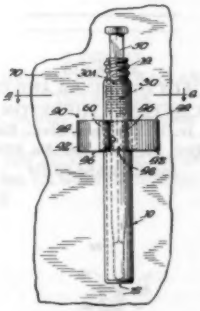
A contact lens case comprising a lens-supporting platform, a cylindrical member and a cap, the cylindrical member being positionable over the platform to form a chamber for liquid, and the cap being positionable over the cylindrical member to close the chamber.

3,768,634

SYSTEM FOR HANDLING CLINICAL THERMOMETERS

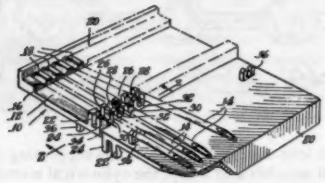
Robert J. Creevy, Wilmette, Ill., assignors to Xttrium Laboratories, Inc., Chicago, Ill.

Continuation of Ser. No. 870,586, Nov. 5, 1969, abandoned, which is a continuation of Ser. No. 703,705, Feb. 7, 1968, abandoned. This application Dec. 10, 1971, Ser. No. 206,876
Int. Cl. B65d *81/22*, *85/30*
U.S. Cl. 206—16.6 **9 Claims**



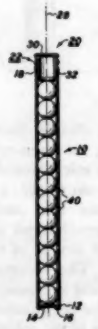
A system for handling clinical thermometers of predetermined length comprising an open-mouthed vial precharged with a selected volume of microbiocidal solution and adapted to receive a clinical thermometer, a closure for selectively sealing the mouth of the vial, and attaching means for removably securing the precharged vial to a supporting surface so that the unsealed mouth of the vial is positioned to receive the thermometer. The volume of microbiocidal solution precharged into the vial is measured so that the displacement of the solution by the thermometer immerses the major length of the thermometer in the solution without overflowing the vial. In using one embodiment of the system, wherein the thermometer is packaged separately from the precharged vial, the attaching means is applied to a supporting surface at a desired location; the vial is removably secured to the attaching means with the mouth of the vial unsealed; and a clinical thermometer is then inserted into the vial through the unsealed mouth. The major portion of the thermometer is thereby immersed in the microbiocidal solution. In a second embodiment, the thermometer is furnished in the precharged vial and the vial is provided with a closure which seals the vial and maintains the thermometer firmly in the vial. In using this second embodiment, the vial is unsealed by dislodging the closure before securing the vial to the attaching means.

3,768,635
NEEDLE CARRIER
Harold A. Eggert, Mt. Prospect, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.
Filed Nov. 1, 1971, Ser. No. 194,107
Int. Cl. B65d 21/02, 85/24, 85/62
U.S. Cl. 206—17 8 Claims



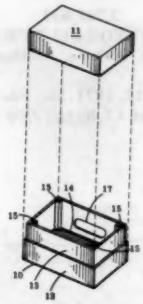
The present invention relates generally to improvements in carriers for elongate needles and more particularly to carriers of elongate needles of the infusion type. An embodiment of the invention disclosed herein includes a base plate having a plurality of transverse needle supports in the form of a plurality of spaced needle accommodating open end recesses. Alternate recesses in at least two of the supports are defined by fingers adapted to yieldably grip the periphery of a needle accommodated thereby. The carriers are preferably disposable and may be arranged in stacked relation.

3,768,636
CYLINDRICAL CONTAINER AND SPHERICAL CONTENTS THEREFOR
John J. O'Connell, Jr., 415 Winona Blvd., Rochester, N.Y.
Filed Dec. 22, 1969, Ser. No. 886,935
Int. Cl. B65d 83/04
U.S. Cl. 206—42 1 Claim



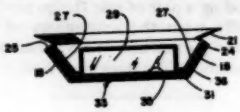
A package including a flexible, resilient cylindrical tube, spherical pills therein and a stopper therefor. The pills are of a diameter slightly smaller than the tube so they may be poured therefrom. The stopper has flexible fingers extending into the tube to restrain the pills from movement as during shipment. The pills are dispensed by removing the cap, deforming the tube beneath the predetermined number of pills to be dispensed so as to form a barrier prohibiting the dispensing of pills therebelow and then inverting the tube to permit the pouring out of only the predetermined number of pills.

3,768,637
MODULAR KNOCKDOWN DISPLAY
Lee Yun Whang, Executive Hotel, 237 Madison Ave., New York, N.Y.
Filed Dec. 27, 1971, Ser. No. 212,144
Int. Cl. B65d 79/00; A45f 5/10
U.S. Cl. 206—44 R 11 Claims



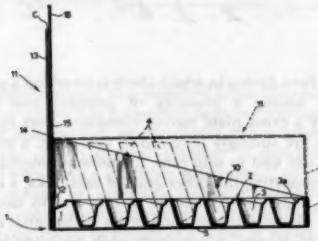
A display is self-containable in a box, parts of which are used for the exhibition of the display. The same box can contain inventory and may have an opening for easy access of inventory. Modifications permit joining of displays and variations in the support and crosspieces.

3,768,638
DISPLAY CONTAINER
John W. Clarke, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed Feb. 4, 1972, Ser. No. 223,588
Int. Cl. B65d 25/00
U.S. Cl. 206—45.34 8 Claims



A display container is provided with a base receptacle having a pair of canted walls with an undercut to which a flexible cover having flanges is interlocked.

3,768,639
DISPLAY CONTAINER
Amilcare Dogliotti, Neive (Cuneo), Italy, assignor to P. Ferrero & C S.p.A., Alba (Cuneo), Italy
Filed Dec. 15, 1971, Ser. No. 208,140
Claims priority, application Italy, June 7, 1971, 53247-B/71
Int. Cl. B65d 25/10, 5/36, 1/36
U.S. Cl. 206—45.19 2 Claims



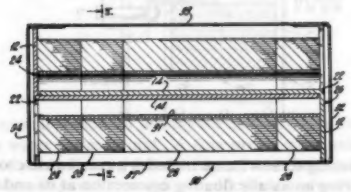
A display container for elongate items such as sweetmeats has a flat tray-like support element with recesses for receiving

individual items endwise and, the support element being located in a cardboard or like box having a rear wall which is higher than its front wall and a lid hinged to the rear wall. The lid forms an advertisement panel when raised and the entire box can be folded flat when the support element is removed.

3,768,640
NOVEL CLOTH WINDING BOARD
Andrew Piscatelli, South Amboy, N.J.
Filed July 16, 1971, Ser. No. 163,222
Int. Cl. B65d *85/67*
U.S. Cl. 206—50 **7 Claims**

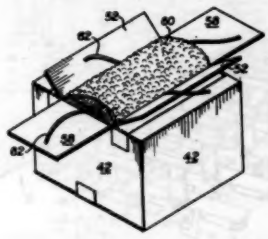
There is provided a novel form of winding board for textiles, cloths and other fabrics, which is molded out of expanded polystyrene. This novel board has excellent structural characteristics as well as resistance to water and bacterial damage.

3,768,641
ADHESIVE TAPE PACKAGE
Lawrence Jerzewski, Jr., East Millstone, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.
Filed Nov. 3, 1971, Ser. No. 195,127
Int. Cl. B65d *85/62, 85/67*
U.S. Cl. 206—52 R **6 Claims**



A container for packaging a plurality of tape rolls and having two ends and walls therebetween is provided with two inserts which form at least one sturdy, adjustable beam for supporting the tape rolls away from the walls of the container. Each insert comprises a planar base for fitting in close contact with an end of the container and a planar elongated projection extending into the container from a central portion of the base and in a plane essentially perpendicular thereto. When the two inserts are fitted against each end of the container, their projections overlie each other and form the supporting beam. Each insert may be inexpensively provided in the form of a set up, one piece, planar blank comprising a base portion and at least one co-planar projection extending longitudinally therefrom, the blank being provided with through cuts and bending scores whereby the projection may be rotated out of the plane of the base to form the insert of this invention.

3,768,642
SHIPPING AND DISPENSING CARTON
Elwood F. Hansen, Allendale, and Arnold Goldberg, Fair Lawn, both of N.J., assignors to Drico Industrial Corp., Wallington, N.J.
Continuation-in-part of Ser. No. 820,196, April 29, 1969, abandoned. This application Nov. 16, 1970, Ser. No. 89,679
Int. Cl. B65d *5/00, 83/00*
U.S. Cl. 206—56 R **7 Claims**



Shipping and dispensing carton for a stack of compressed and bound resilient, compressible frameless air filter elements including a bottom and four upright side walls, a top flap attached to a side wall and infolded over the carton, the top flap having a centrally located line parallel to the side wall and dividing the flap into a retaining portion which is secured in place and a dispensing flap which mates with the opposite side wall to form a seam, the dispensing flap being adapted to be outfolded thereby forming a dispensing opening through which said filter elements can be withdrawn from said stack one at a time.

3,768,643
NESTABLE NET PRODUCE BAG AND CARRIER THEREFOR
Edward C. Bruno, Denver, Colo., assignor to Mario Manetti, Chicago, Ill.
Filed July 27, 1971, Ser. No. 166,368
Int. Cl. B65d *69/00, 29/04*
U.S. Cl. 206—65 K **3 Claims**

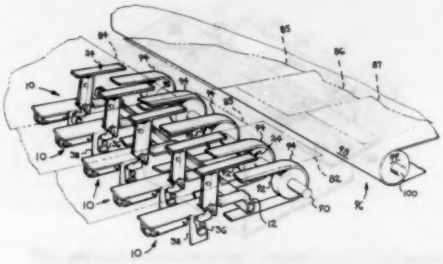
This invention relates to an improved net bag of the type in which produce is packaged, particularly bunches of grapes and the like, characterized by a novel closure at one end, the structure and location of which results in a snag-proof tail that allows the bags to be nested and removed one at a time. The invention also encompasses the carrier for the nested bags which comprises an elongate bendable strap preferably of one-piece construction and folded over intermediate its ends to define a collar adapted to fit up inside the nest and hold the bags open when slipped down axially over an upright mandrel to produce a dispenser.

3,768,644

METHOD AND APPARATUS FOR INDIVIDUALLY DIVERTING SELECTED SHEETS FROM A CORRUGATOR BRIDGE

Frank J. Di Frank, and Thomas E. Vogt, both of Toledo, Ohio, assignors to Owens-Illinois Inc., Toledo, Ohio

Filed Sept. 11, 1972, Ser. No. 287,606
Int. Cl. B07c *5/36*
U.S. Cl. 209—74 R 16 Claims



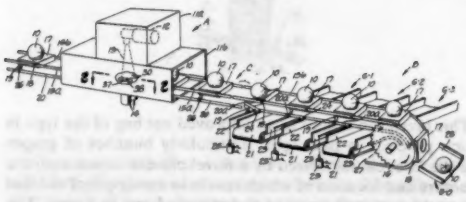
Apparatus and method for individually diverting sheets of corrugated paperboard from one of the bridges of a corrugator. A plurality of sheet diverting mechanisms are positioned between and below the conveyor belts of a corrugator bridge. A pivotally mounted sheet lifting arm is normally held down by a biasing air pressure on an air motor which operates the arm. When it is desired to divert a sheet, the biasing air pressure is removed, and a lower air pressure on the opposite side of a piston in the air motor starts to pivot the arm. However, the weight of sheets on the arm is sufficient to overcome the force of the lower air pressure and movement of the arm is stopped. When the sheet passes off of the arm, it is moved all the way up, tripping a valve which admits high-pressure air to hold the arm up. Thus, the next sheet in line is diverted from its path of travel. Either by operator action or by a preset timer, the high-pressure air is then removed, allowing subsequent sheets to force the arm downward again which, in part, resets the system for a future diverting cycle.

3,768,645

METHOD AND MEANS FOR AUTOMATICALLY DETECTING AND SORTING PRODUCE ACCORDING TO INTERNAL DAMAGE

Tim D. Conway, Upland, and Paul F. Paddock, Riverside, both of Calif., assignors to Sunkist Growers Inc., Sherman Oaks, Calif.

Filed Feb. 22, 1971, Ser. No. 117,565
Int. Cl. B07c *5/34*
U.S. Cl. 209—111.5 24 Claims



Apparatus and method for automatically evaluating articles, particularly citrus fruits, on the basis of the uniformity and non-uniformity of their transparency to X-rays and selectively separating them into different grades according to such evaluations, the fruit being oriented and carried by a conveyor in a path between an X-ray source and X-ray detectors positioned to straddle the fruit core portion, the signals from the detectors being carried in an internal quality computer controlled by timing sensors responsive to fruit movement through the X-rays, wherein the percentage of internal damage is computed for each fruit, after which the fruits are successively separated into different predetermined grades according to their respective damage evaluations.

3,768,646

FLOTATION OF SILICEOUS MATERIALS WITH DIAMINE REACTION PRODUCTS

Edward A. Grannen, Upland, Calif., assignor to Occidental Petroleum Corp., Los Angeles, Calif.

Division of Ser. No. 467, Jan. 2, 1970, abandoned. This application Sept. 16, 1971, Ser. No. 181,233
Int. Cl. B03d *1/02*
U.S. Cl. 209—166 3 Claims

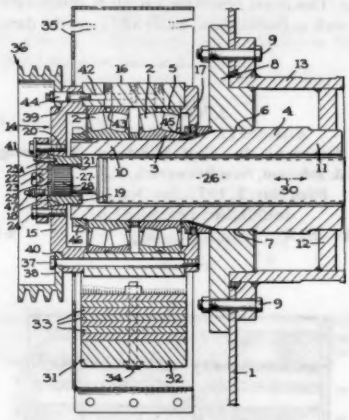
A process for the flotation separation of ore valves from siliceous materials by reagents obtained by the reaction of N,N-dialkyl alkylene diamines and N,N-dialkyl-N′-alkyl alkylene diamines with saturated, unsaturated and hydroxylated fatty acids.

3,768,647

VIBRATING SCREENING APPARATUS

Gerald D. Johnson, Forest Lake, Minn., assignor to Partec Inc., Oak Brook, Ill.

Filed June 11, 1971, Ser. No. 152,272
Int. Cl. B07b *1/42*
U.S. Cl. 209—364 8 Claims



A vibrating screen frame includes a concentric cross timing shaft having an axially floating connection at its ends with rotary housings provided with counterweight assemblies. Bearing means mount the interior of the housings upon support means fixed to the frame and surrounding the cross shaft.

3,768,648

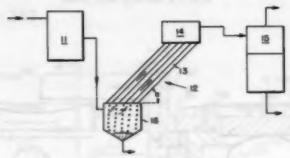
METHOD AND APPARATUS FOR SEPARATING SUSPENDED MATERIAL FROM A FLUID STREAM

John R. Anderson, Cranbury, and William A. Beach, Milltown, both of N.J., assignors to Sybron Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 39,997, May 25, 1970, abandoned. This application July 21, 1972, Ser. No. 273,814
Claims priority, application Germany, Aug. 6, 1971, P 21 39 521.1
Int. Cl. B01d *21/10*
U.S. Cl. 210—83 18 Claims

An improved settler assembly comprising a plurality of inclined passages of chevron cross-sectional configuration.

The chevron configuration provides a higher critical flow rate than for passages of equal area and length but of conventional



cross-sectional configuration such as square, circular, hexagonal and the like. A method of separating suspended material from a liquid is disclosed.

3,768,649

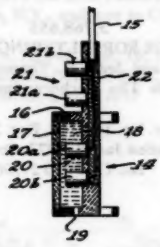
REGENERATION SENSING SYSTEM

Andrew J. Fleckenstein, 2880 Santa Marin Dr., Brookfield, Wis.

Continuation-in-part of Ser. No. 856,655, Sept. 10, 1969, abandoned. This application July 15, 1971, Ser. No. 162,804

Int. Cl. B01d *15/06*

U.S. Cl. 210—96 **10 Claims**



An electrical system for sensing the desirability of regeneration of a water softener tank. A first probe measures the resistance of water flowing through the softener bed and this resistance is compared through an electrical network with a standard provided by the resistance of an auxiliary bed. A comparison circuit actuates a regeneration circuit when the resistance measured by the first probe is at a predetermined relationship to the resistance of the standard.

3,768,650

CONTINUOUS ION EXCHANGE SYSTEM

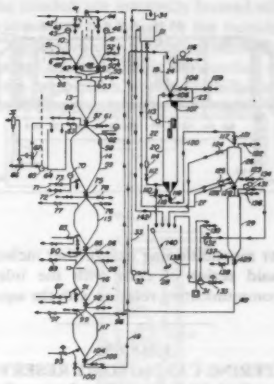
James F. Zievers, La Grange, Ill., assignor to Industrial Filter & Pump Mfg. Co., Cicero, Ill.

Continuation of Ser. No. 785,143, Dec. 19, 1968, abandoned. This application Aug. 16, 1971, Ser. No. 172,192

Int. Cl. B01d *33/20*

U.S. Cl. 210—140 **8 Claims**

A continuous ion exchange regeneration system includes an ion exchange column in the main process line and a plurality of other interconnected columns, all of which columns are filled with resin at all times. Periodically, small quantities of



resin are forced from column to column by the application of pulses of pneumatic pressure to a sealable, resin feed column positioned above the ion exchange column.

3,768,651

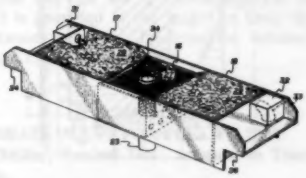
AQUARIUM FILTER

Warren D. Streeter, 6590 MacArthur Dr., Lemon Grove, Calif.

Filed Sept. 22, 1971, Ser. No. 182,709

Int. Cl. E04h *3/20*

U.S. Cl. 210—169 **1 Claim**



An aquarium filter dimensioned for resting on the top rear portion of an aquarium in which unfiltered water from the aquarium tank is pumped into first and second end fittings which communicate with first and second end compartments, being separated by a removable recessed center box. The first and second end compartments contain filter wool and communicate with the removable box through a plurality of apertures in each side of the removable center box, the box being filled with charcoal. A riser tube rises through the charcoal in the central removable box and communicates with the aquarium tank forming an exhaust thereto after the filtering.

3,768,652

WATER RECONDITIONING UNIT FOR AQUARIA

Joseph Jardim, Timehri Field, P.O. Box 867, Georgetown, Guyana

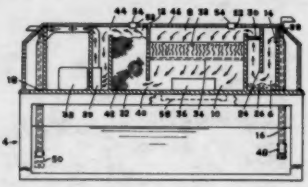
Filed Jan. 17, 1972, Ser. No. 218,251

Int. Cl. E04h *3/20*

U.S. Cl. 210—169 **2 Claims**

A water reconditioning unit for an aquarium which comprises a plurality of water conditioning cells assembled in series with each cell in flow communication with at least one neighbouring cell; at one end of said series of cells is a commu-

nicating inlet and at the other end a communicating outlet; a pump is included in said series for drawing water into the series through said inlet; circulating it in turn through said outlet



and said water reconditioning unit further includes means for positioning said series of cells with the inlet and outlet aforesaid in communicating relation with the aquarium.

3,768,653

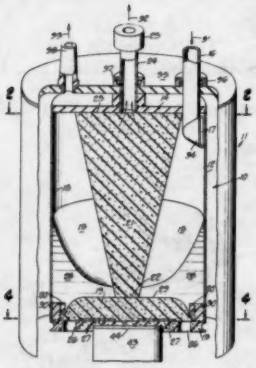
FILTERING CARDIOTOMY RESERVOIR

Robert C. Brumfield, 73 Emerald Bay, Laguna Beach, Calif.

Filed Mar. 21, 1972, Ser. No. 222,124

Int. Cl. B01d *35/14, 31/00*

U.S. Cl. 210—188 **19 Claims**



A surgical blood sucker and peristaltic pump combination discharge a three-phase mixed stream of blood, air and surgical tissue debris into a cardiotomy reservoir through a slot shape blood inlet nozzle tangentially disposed on the wall of the blood reservoir volume. The tissue debris is collected internally in the reservoir on the reservoir base filter face and the face of the conical air filter. The air, under slight pressure in the reservoir, exits from the reservoir through the air filter and a relief valve. The defoamed blood flows from the reservoir through multiple base filter plate exit apertures, into a blood oxygenator.

3,768,654

FILTERS

Francis Preston Pearce, Amersham, England, assignor to Airpel Limited, Chalfont St. Perer, England

Continuation of Ser. No. 12,827, Feb. 19, 1970, abandoned.

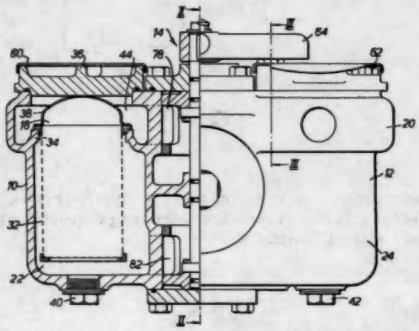
This application May 1, 1972, Ser. No. 249,434

Claims priority, application Great Britain, Feb. 21, 1969, 9,516/69

Int. Cl. B01d *35/02*

U.S. Cl. 210—232 **5 Claims**

A pipeline filter unit comprising a filter basket closed at one and disposed coaxially, and in use vertically with its open end up, within a chamber having inlet and outlet connections providing for downflow of liquid to be filtered through the basket from its open end and a top cover removable to permit withdrawal of the basket. The element is arranged to seat against a supporting flange within the filter chamber; the inlet compartment on the side of the open end of the element is



formed with a gallery all around the element-supporting flange; and the gallery is fitted with a drain. The invention also extends to a four-way changeover cock having a control diverter integral with its body and two ported members secured to a spindle for rotation within the body.

3,768,655

TUBE GUIDE FOR FILTERING APPARATUS

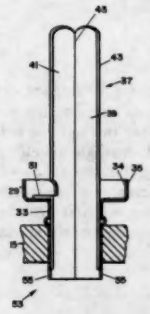
Michael K. Click, and Jerry L. Timmons, both of Lebanon, Ind., assignors to The Carborundum Company, Niagara Falls, N.Y.

Continuation of Ser. No. 102,741, Dec. 30, 1970, abandoned.

This application Jan. 8, 1973, Ser. No. 321,608

Int. Cl. B01d *27/06*

U.S. Cl. 210—236 **1 Claim**



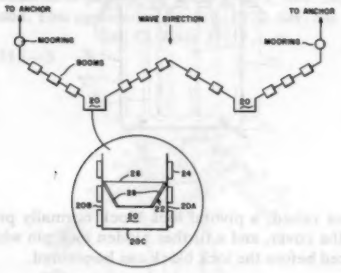
In a filtering apparatus, a tube guide is employed for positioning a filter cartridge on a seating member. The tube guide comprises an elongated member which projects upwardly to guide the filter cartridge into registry with the seating member. A lower fastening portion of the tube guide includes a stop which engages a top portion of the seating member to prevent downward movement of the tube guide. A snap-lock on the tube guide engages the bottom of the seating member to prevent upward movement of the tube guide.

3,768,656

OIL ACCUMULATOR

John B. Nugent, Winthrop, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 28, 1971, Ser. No. 148,107
Int. Cl. E02b 15/04
U.S. Cl. 210—242 4 Claims



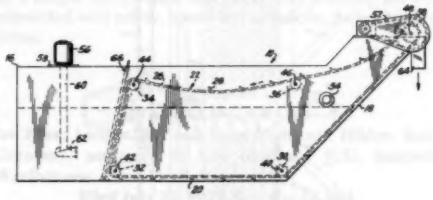
A flotatable unit for accumulating oil from the surface of water, essentially comprising a framed member having three sides and open at the top and bottom thereof, and also having an open end called the bow, said member including an appropriately located ramp and baffles. The accumulator is inserted into a line of booms at appropriate intervals. A wave with oil on its surface enters the accumulator, surges up over the ramp, and the oil is trapped in the unit for later removal.

3,768,657

SLUDGE TANK WITH SELF-CLEANING SCREEN AND SCREEN FOR USE THEREIN

Don H. Hoag, Erieville, N.Y., assignor to Clarkson Industries, Inc., New York, N.Y.

Division of Ser. No. 72,746, Sept. 16, 1970, Pat. No. 3,675,778. This application Oct. 15, 1971, Ser. No. 189,769
Int. Cl. B01d 29/38
U.S. Cl. 210—298 8 Claims



A conveyorized sludge tank is provided with a screen mounted at the bottom of the tank for swinging motion toward and away from the flights of the conveyor and adapted to lean against a course of the conveyor to cause the conveyor flights to continuously wipe the filtering surface of the screen. The screen is preferably formed in sections, each of which has spaced filtering strips and the filtering strips of adjacent sections diverge to form a herringbone pattern that minimizes and equalizes wear on the conveyor flights.

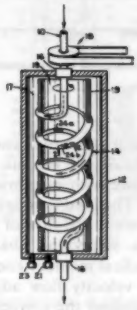
3,768,658

SEPARATOR

James R. Palma, 1502 Curry Rd., Schenectady, N.Y.

Continuation-in-part of Ser. No. 039,296, May 21, 1970, Pat. No. 3,706,383. This application Dec. 4, 1972, Ser. No. 312,041
Int. Cl. B01d 21/26
U.S. Cl. 210—304 7 Claims

A fluid separator for separating solids from a liquid or separating a heavier substance from a lighter substance in either liquids or gases by means of centrifugal force in conjunction with the eddy current principle comprising a housing or jacket containing a spirally formed fluid conduit for rotation within said housing adapted to convey fluid therethrough. The coils of the conduit are internally formed with a multiple of spaced abutments on the inside or the outside of the conduit, or both, the abutments extending into the path of the fluid, and openings are provided in the conduit adjacent each of the abutments to permit a selected substance to exit from the conduit due to forces created by the rotating spiral conduit



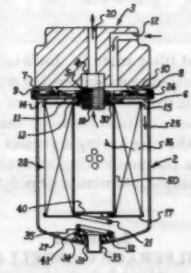
which tends to flow a lighter substance inwardly and a heavier substance outwardly to the wall of the conduit. The abutments in the conduit extending into the path of the fluid set up eddy currents in the spinning liquid to spin adjacent the leading edge of the abutments in one direction and around the trailing edge of the abutments in the reverse direction collecting the lighter or heavier substances disposed in the fluid which are then forced out through the apertures adjacent said abutments. A wall is provided in the jacket to keep lighter and heavier substances separate. Intermediate substances may continue to flow through the conduit.

3,768,659

DRAIN VALVE FOR FUEL FILTER

Clarence R. Miller, Racine, Wis., assignor to Tenneco Inc., Racine, Wis.

Filed Oct. 27, 1971, Ser. No. 192,891
Int. Cl. B01d 29/42
U.S. Cl. 210—313 11 Claims



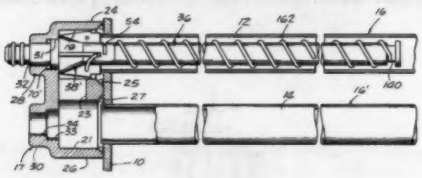
A manually operated push button type valve placed at a low point in the outer shell of a fluid filter, such as those filters used to filter fuel for internal combustion engines, provides an efficient, economical means for draining immiscible fluids, such as water, from the filter.

3,768,660

REVERSE OSMOSIS CELL WITH TURBULATOR MEANS

Leo Block, Woodland Hills, Calif., assignor to Raypak, Inc., Westlake Village, Calif.

Filed Feb. 14, 1972, Ser. No. 225,988
Int. Cl. B01d 31/00
U.S. Cl. 210—321 7 Claims



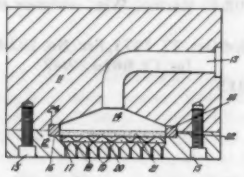
A reverse osmosis cell of the type embodying an elongated, hollow, porous core having an osmotic membrane on the exterior thereof. The core with membrane is within a tubular shell, or tube section. The feed fluid is in the annulus between the core and tubular shell. The flow of feed fluid is a continuous series flow in a serpentine channel at pressure and velocity. A flexible helical member encircles the core to provide turbulence and velocity flow adjacent the membrane. The velocity acting against the convolutions displaces them axially allowing them to return when the pressure is released to cause flushing out of any solid particulate matter adjacent the membrane.

3,768,661

FILTER SEAL

Ronald Bell Coates, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 28, 1970, Ser. No. 101,538
Claims priority, application Great Britain, Jan. 28, 1970, 4,152/70
Int. Cl. D01d 3/00
U.S. Cl. 210—449 15 Claims



A sintered metal filter plate in, for example, a melt extrusion apparatus is sealed to its supporting structure by means of a ring of material surrounding the edge of the plate and fitted into an annular space defined between the plate and the supporting structure, the ring having a greater thermal coefficient of expansion than the supporting structure and being constructed of, for example, aluminum or polytetrafluroethylene.

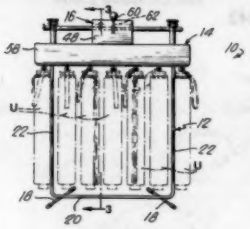
3,768,662

ANTI-PILFERAGE UMBRELLA STAND

Servatius L. Ritzen, Montreal, Quebec, Canada, assignor to Telesco Brophey Limited, East Montreal, Quebec, Canada

Filed Oct. 27, 1971, Ser. No. 192,982
Int. Cl. A47g 25/12; A47f 7/00
U.S. Cl. 211—4 6 Claims

A stand or display rack either fixedly anchored or supported on a display counter, in which a plurality of umbrellas are suspended by a loop or the like; a displaceable roof overlying the umbrellas and normally preventing removal until tilted to one side or raised; a pivotal lock-block normally preventing tilting of the cover, and a further hidden lock pin which must be displaced before the lock block can be pivoted.

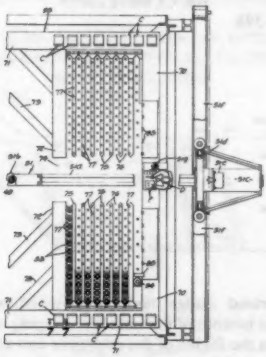


3,768,663

CONTROL FOR WELL PIPE RACKS AND THE LIKE

John W. Turner, Jr.; Richard A. Van Wormer, and James Bernard Walling, all of Houston, Tex., assignors to Byron Jackson, Inc., Long Beach, Calif.

Division of Ser. No. 47,057, June 17, 1970, abandoned. This application Oct. 13, 1971, Ser. No. 188,410
Int. Cl. A47f 3/08, 7/00
U.S. Cl. 211—60 S 14 Claims



Control means for a well pipe rack and the like wherein a plurality of fluid pressure operated devices are sequentially operated. The pipe rack includes a finger board having horizontal arms defining spaces for receiving lengths of well pipe, and fingers are pivotally mounted on the arms and actuatable by fluid pressure between upright or open positions and horizontal or closed positions bridging the spaces between the arms to confine the lengths of pipe in place. The control includes a step-by-step operable mechanism for sequentially shifting a number of valves to one position as the mechanism is operated in one direction, the valves returning to an initial position when the mechanism is operated in the other direction. The rack fingers are sequentially opened and closed responsive to shifting of the valves between the two positions.

3,768,664

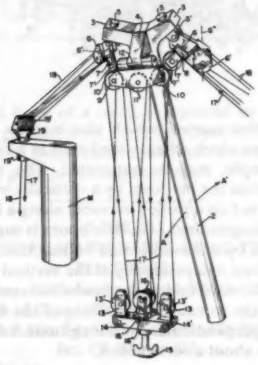
SHIP LOADING BOOM INSTALLATION HAVING LOADING AND SUSPENSION TACKLES AND AUTOMATIC GUIDE BLOCKS FOR POSITIONING THE SUSPENSION TACKLE BY THE LOAD TACKLE

Ralf Bauer, and Nils Schummer, both of Warnemunde, Germany, assignors to Veb Warnowwerft, Warnemunde, Germany

Continuation-in-part of Ser. No. 877,693, Nov. 18, 1969, abandoned. This application Jan. 12, 1972, Ser. No. 217,103

Int. Cl. B66c *23/52*

U.S. Cl. 212—3 6 Claims



Ship loading installation having boom suspension tackle and boom controlling load tackle. The suspension blocks of the boom have guide blocks mounted on their undersides by swivel means. The loading rope runs over the guide blocks to the load-hoisting blocks. As a result this rope, when swinging the boom into a new position, automatically positions the suspension blocks by the guide blocks, so as to avoid twisting of the suspension tackle. The several blocks and swivel means form a simple inexpensive and stable unit whereby the boom manipulated with safety, speed and simplicity, heavy loads can be lifted.

3,768,665

TRAVELLING CRANE

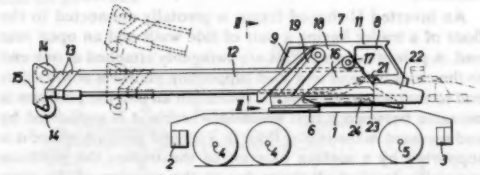
Peter Eiler, Langenfeld, and Hans Weiskopf, Hilden, both of Germany, assignors to Leo Gottwald K.G. Reisholzer, Werftstrasse, Dusseldorf, Germany

Filed July 21, 1970, Ser. No. 56,884

Claims priority, application Germany, July 23, 1969, P 29 37 349.0

Int. Cl. B66c *23/36*

U.S. Cl. 212—38 8 Claims



A travelling crane having a slewing superstructure which carries a telescopic jib and, to one side of the jib, a driver's cabin and a craneman's cabin.

3,768,666

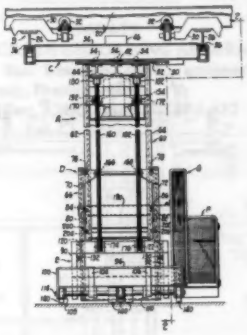
TELESCOPING-TYPE STACKER CRANE

Karl A. Pamer, Chagrin Falls, Ohio, assignor to McNeil Corporation, Akron, Ohio

Filed Apr. 20, 1972, Ser. No. 245,717

Int. Cl. B66c *19/00*

U.S. Cl. 212—128 1 Claim



A stacker crane comprising a multi-section telescoping or collapsible mast connected for rotation about its vertical axis to the underside of a trolley of an overhead crane and having a load carriage movable vertically along the lower section, power means for moving the respective sections of the mast and the load carriage vertically in a predetermined sequence comprising a flexible member connected to a take-up means at the top of the mast and subsequently reeved about pulley means connected to the upper end of the movable mast sections and the load carriage with the intermediate reaches reeved about pulleys at the top of the mast and having its other end connected to the upper end of the mast.

3,768,667

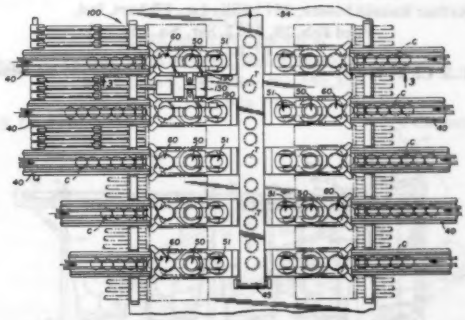
WORKPIECE TRANSFER MECHANISM

Thomas B. Paumier, Canton, Joseph D. Bulso, Jr., and William R. Lewers, both of Canton, Ohio, assignor to Paumier Inc., Canton, Ohio

Filed Mar. 22, 1971, Ser. No. 126,860

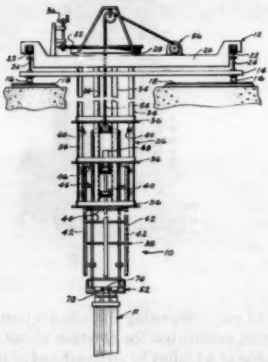
Int. Cl. B65g *59/06*

U.S. Cl. 214—1 BB 13 Claims



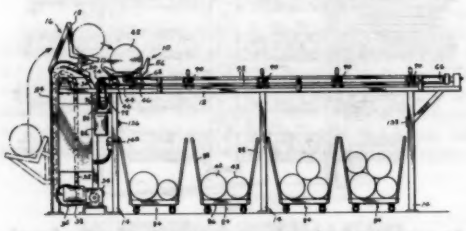
An apparatus for transferring a plurality of rows of workpieces, such as cans and the like, laterally to a machine having a plurality of work stations at which the workpieces are gripped through a transverse motion and, while gripped, are transferred laterally to the successive stations. The movements are timed with, but not tied to, the working movement of the machine itself by a drive system of cams, gears and the like.

3,768,668
FUEL BUNDLE AND CONTROL ELEMENT ASSEMBLY HANDLING MECHANISM
Glen Elwin Schukei, South Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 17, 1971, Ser. No. 209,103
Int. Cl. B66c *19/00*
U.S. Cl. 214—27 7 Claims



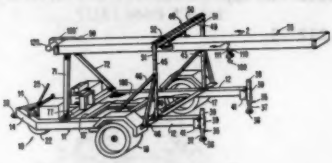
A novel fuel bundle and control element assembly handling mechanism of a unitary construction. Mounted on the fuel lifting assembly of a refueling machine is a hudraulic control element assembly holding mechanism. A fuel bundle grapple mechanism passes through the fuel lifting assembly and is independently, vertically controllable with respect to the lifting assembly from a location on the refueling machine. Thus, the control element assembly and the fuel bundle may be gripped and manipulated independently, yet due to the interrelation of the grapple mechanisms, the control element assembly can be made to remain within the refueling machine lifting assembly during the refueling process.

3,768,669
DEVICE FOR SORTING CARPET ROLLS
Arthur Ronald Moore, 3512 Hilly Ln., Elkhart, Ind.
Filed Feb. 29, 1972, Ser. No. 230,245
Int. Cl. B65g *67/30*
U.S. Cl. 214—64 9 Claims



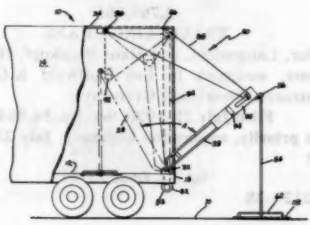
A device for sorting rolls of carpet. The carpet roll is transferred by a carrier from a loading location to a second selected location where the carpet roll is dumped by the carrier into a waiting depository.

3,768,670
CARRIER FOR A HEAVY LOAD INCLUDING A BOOM
James E. Cloud, Lexington, Ky., assignor to Special Machinery, Inc., Lexington, Ky.
Filed Mar. 10, 1972, Ser. No. 233,561
Int. Cl. B60p *1/54*
U.S. Cl. 214—75 H 14 Claims



A self-propelled carrier, which also may be towed, has a fixed platform on which a heavy load such as a concrete burial vault, for example, may be supported. The vault may be moved to and from the platform by a vertically movable hook, which is supported on a trolley movable along a boom parallel to the boom's longitudinal axis. The boom is supported intermediate its ends by a movable mast so that the boom may be lowered and raised independently of the vertical movement of the hook. The forward end of the boom has control members connected thereto to cause both tilting of the boom about a horizontal axis perpendicular to its longitudinal axis and pivoting of the boom about a vertical axis.

3,768,671
LOADING DEVICE
Gordon LaVier, 4963 Marshall S.E., Grand Rapids, Mich.
Filed Aug. 20, 1971, Ser. No. 173,582
Int. Cl. B60p *1/48*
U.S. Cl. 214—77 R 14 Claims



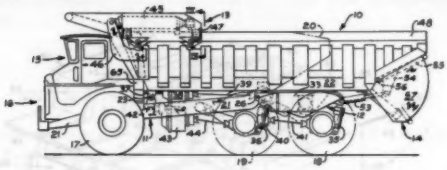
An inverted U-shaped frame is pivotally connected to the floor of a trailer having a pair of side walls and an open rear end. A pair of support arms are swingably attached at one end to the cross bar and to a load supporting platform at the other end so that when the frame is rotated in an arc, the platform is movable between a first position wherein it is supported by and recessed in the trailer floor to a second position where it is supported by a surface exterior of the trailer, the platform remaining level at all times due to the rotation of the arms about the cross bar. The platform when supported in the vehicle is flushed with the floor. Means are connected to the frame to provide positive movement of the frame and support platform.

3,768,672

REPLACEABLE TRUCK BODY AND METHOD FOR USING SAME

Frank A. Grooss, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 24, 1972, Ser. No. 228,884
Int. Cl. B65f *1/12*
U.S. Cl. 214—82 12 Claims



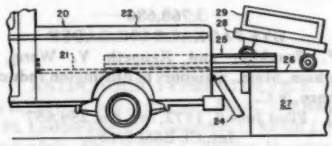
The standard body of a truck is replaced by an elongated one having a greater load carrying capacity. An auxiliary frame assembly is connected in tamdem to the truck's main frame assembly prior to such replacement.

3,768,673

EXTENDABLE AND TILTABLE LOAD-TRANSFER PLATFORM

Bernard Nydam, 4004 Ivanrest, and Ralph Voetberg, 3218 Ivanrest, both of Grandville, Mich.

Filed Jan. 31, 1972, Ser. No. 221,969
Int. Cl. B60p *1/00*
U.S. Cl. 214—83.24 2 Claims



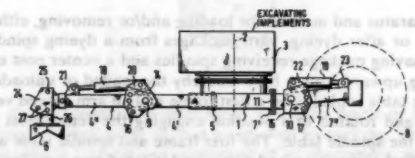
A load-carrying platform is roller-mounted on rails normally secured to the floor of a truck, and is arranged to move from a forward position over the floor of the truck to a rearwardly-extended position overhanging the rear end of the truck. At the rearward extreme of this movement, the rails release the platform for tilting on the truck to form an inclined loading ramp.

3,768,674

VEHICULAR EXCAVATING APPARATUS

Ernst Menzi, Widnau, Switzerland, assignor to Ernst Menzi AG, Widnau, Switzerland

Filed June 24, 1971, Ser. No. 156,441
Claims priority, application Switzerland, July 15, 1970, 10749/70
Int. Cl. B66f *9/00*
U.S. Cl. 214—132 8 Claims



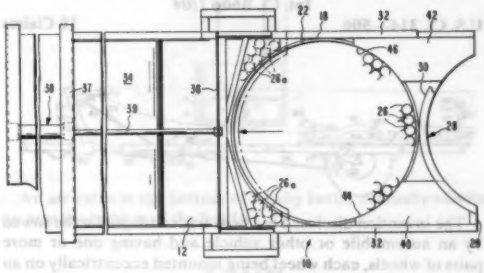
A vehicular power shovel has a body on which the excavating implements are mounted by means of a rotating platform. Four arms project horizontally from the body and are movable horizontally relative to the body. Each arm consists of two longitudinal portions connected by a pivot and moved by a hydraulic jack about the normally horizontal pivot axis. Two of the arms carry idler wheels on their free ends, and the two others carry soil-engaging claws. The hinged arms permit the positions of the wheels and claws to be adapted to sloping or otherwise uneven terrain.

3,768,675

RETORT CRATE UNLOADING APPARATUS

George Argyres, San Leandro, Calif., assignor to Gerber Products Company, Fremont, Mich.

Filed Dec. 3, 1971, Ser. No. 204,432
Int. Cl. B65g *65/00*
U.S. Cl. 214—310 8 Claims



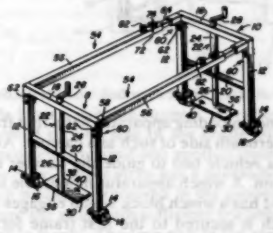
Apparatus for unloading a retort crate having stacked, vertically shiftable layers of individual articles, such as glass jars or the like, wherein a convex article-engaging bail is shiftably mounted adjacent to a table top having a circular opening therethrough. The bail moves horizontally over the table to sweep the uppermost layer of articles of the retort crate laterally of the opening and onto a supporting surface adjacent thereto. The bail has substantially the same curvature as at least part of the outer boundary of the opening and, as the bail sweeps the uppermost articles off the crate, it moves into a location at which it positions a number of the articles in partially surrounding relationship to the opening. Thus, these last mentioned articles define abutments which serve to stabilize and prevent toppling of certain of the articles of the next layer to be swept off the stack.

3,768,676

DESK MOVING DEVICE

Henry W. Spitzer, 1404 First St., Havre, Mont.

Filed June 9, 1971, Ser. No. 151,188
Int. Cl. B60p *1/00*
U.S. Cl. 214—392 4 Claims



A load straddling, lifting, handling and transporting device which enables a single user to clampingly harness a heavy of-

fice desk, or the like, and move same from a room to facilitate cleaning. It comprises a frame structure having a pair of vertical leg frames whose upper ends are joined by extensible and retractable connecting rails. The lower ends of the legs are provided with casters whereby the respective leg frames serve as rollable trucks. Each leg frame is provided with manually controllable desk engaging lifting and lowering means which serves to accommodate commonly used desks. This device is ideal for classroom use. It enables one man to handle and move the desks while other persons attend to the room cleaning needs.

3,768,677

BOAT TRAILER

Louie W. Moss, Niceville, Fla., assignor to Drydock Trailers, Inc., Niceville, Fla.

Filed Mar. 27, 1972, Ser. No. 238,095
Int. Cl. B60p 1/04
U.S. Cl. 214—506 **10 Claims**

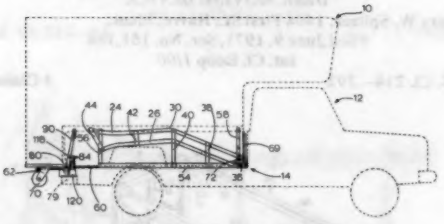
The invention disclosed is a boat trailer adapted to be towed by an automobile or other vehicle and having one or more pairs of wheels, each wheel being mounted eccentrically on an independently rotatable axle. Lever and linking means are provided for rotating each axle separately to raise and lower the body of the trailer, facilitating boat loading and launching. For normal support of a boat during travel, adjustable padded bolsters of large contact area are provided. An auxiliary boat support means is provided to lift the boat off the bolsters on rotation of the axle as the trailer is lowered. The lifting mechanism is locked in raised position for travel. The lift mechanism includes a resilient connection for each wheel, providing independent suspension. The elevating mechanism is operated by a winch which also can be used to pull the boat onto the trailer.

3,768,678

LOADER AND UNLOADER APPARATUS

Gerald P. Youngers, R.R. 1, Viola, Kans.

Filed Dec. 6, 1971, Ser. No. 205,025
Int. Cl. B60p 1/64
U.S. Cl. 214—517 **6 Claims**



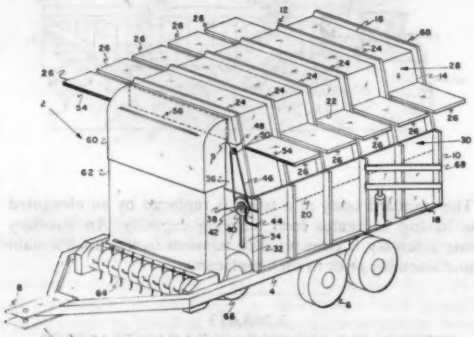
A loading and unloading apparatus has a first frame attachable to the underneath side of such as a camper. Another frame is secured to a vehicle bed to guide the camper into a loaded position thereon. A winch apparatus mountable on the rear of the vehicle bed has a winch block which engages a rope, calbe or chain which is secured to the first frame fore and aft. In operation the winch moves the rope, cable or chain thereby moving the camper relative to the vehicle bed which moves it into a loaded position on the truck bed, or in a reverse operation removes it from the vehicle bed to an unloaded position.

3,768,679

ACCUMULATING CHAMBER FOR COMPACTING HAY WAGON

Ezra Cordell Lundahl, Idaho Falls, Idaho, assignor to Ezra C. Lundahl, Inc., Logan, Utah

Filed Nov. 4, 1971, Ser. No. 195,609
Int. Cl. B60p 1/02; A01d 43/00
U.S. Cl. 214—519 **7 Claims**



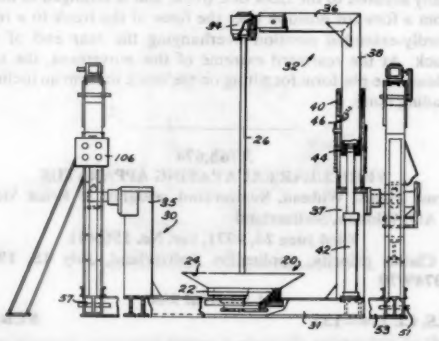
A compacting hay wagon comprising an accumulator chamber into which hay being gathered is delivered, a compacting chamber communicating with the accumulator chamber, and means interposable between said chambers to permit temporary storage of hay in the accumulator chamber during a compacting operation. Both method and apparatus are disclosed.

3,768,680

DYE PACKAGE UNLOADER

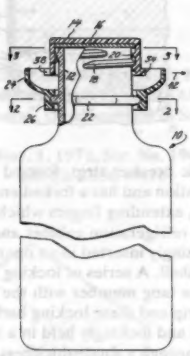
Burton P. Franklin, and Kenneth Y. Wang, both of Framingham, Mass., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed June 5, 1972, Ser. No. 259,657
Int. Cl. B66f 9/18
U.S. Cl. 214—652 **18 Claims**



Apparatus and method for loading and/or removing, either before or after dyeing, yarn packages from a dyeing spindle table having package receiving spindles and a center post extending upward from a base whereby the loaded or unloaded spindle table is placed on a first frame and an arm moved vertically and rotated to a position engaging the center post to clamp the spindle table. The first frame and spindle table are then lifted above a second frame and rotated to a position in which the yarn packages slide off the individual spindles or to a position in which yarn packages can be placed on the individual spindles.

3,768,681
CONTAINER WITH SAFETY CAP
Frank E. Dougherty, Sr., Mays Landing, N.J., assignor to Dougherty Brothers Company, Buena, N.J.
Filed May 25, 1971, Ser. No. 146,667
Int. Cl. B65d 55/02
U.S. Cl. 215—9 7 Claims

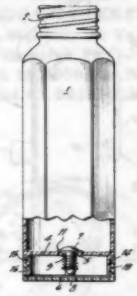


A container for products dangerous to children is provided with a safety cap. The cap can only be removed after first squeezing an elliptical retainer on the bottle or cap to thereby disengage mating lugs on the bottle and cap. Unitl the lugs are disengaged, the cap cannot be removed.

3,768,682
ANTI-CHOLIC FEEDING DEVICE
Cornelius B. Meyers, late of Holland, Mich., and Ralph J. Miolla, Jr., Ft. Lauderdale, Fla., assignors to Ralph J. Miolla, Jr., Ft. Lauderdale, Fla.; Carol J. Vander Hooning, Holland; Lois Pasma, Grandville, both of Mich. and Herbert Wagemaker, Jr., Gainesville, Fla., part interest to each by said Harold F. Schumacher and Ralph J. Miolla, Jr.
Filed Nov. 5, 1971, Ser. No. 196,129
Int. Cl. A61j 9/04
U.S. Cl. 215—11 B 10 Claims

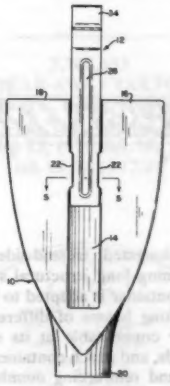
Replacement air is introduced to a baby bottle or the like through a ball valve as fluid is removed by sucking. The valve housing is integral and comprised of an elastomeric material. The housing includes a resilient integral rib which urges the ball into a flow blocking position regardless of the orientation of the bottle except during the removal of fluid.

3,768,683
BABY BOTTLE
Joseph Van Den Bosch, Elgin, Ill., assignor to The Raymond Lee Organization, New York, N.Y.
Filed Dec. 28, 1971, Ser. No. 213,105
Int. Cl. A61j 9/04
U.S. Cl. 215—11 B 4 Claims



An air valve in the bottom of a baby bottle manually admits air into the bottom of the bottle.

3,768,684
DISPENSER BOTTLE WITH HANGING STRAP
Dean H. Buchtel, Canton, Ohio, assignor to Robert C. Dye; Frank L. Buchtel; Harold H. Kehoe, Canton and Edwin W. Oldham, Akron, Ohio; a part interest to each
Filed Nov. 29, 1971, Ser. No. 202,906
Int. Cl. B65d 25/22
U.S. Cl. 215—100 R 5 Claims



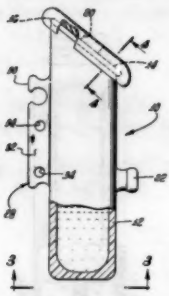
A bottle which is provided with an adjustable strap for hanging the bottle from a suitable support. A vertically extending groove is formed on one side of the bottle with at least one pair of ears projecting toward one another from opposite sides of the groove. The hanger strap has a generally flat elongated portion which is slidably received in the groove. The projecting ears engage the strap with sufficient friction so that it does not tend to slide freely. The free end of the strap has a hook-like configuration and the end of the bottle adjacent the groove may have a stepped configuration to receive this hook-like portion when the strap is fully retracted.

3,768,685

VIAL DEVICE

Mervyn H. Eckman, 1213 Lory, Fort Collins, Colo.

Filed May 8, 1972, Ser. No. 251,406
Int. Cl. B65d 23/12
U.S. Cl. 215—100 R 3 Claims



A vial device having a tubular body open at one end with a resilient cap thereon, said body having an attachment means for a decorative bow and a holding means for a corsage pin and for a decorative net or bow.

3,768,686

CONTAINER FOR ELONGATED ARTICLES

Robert W. Mappes, Fremont, Calif., assignor to Matson Navigation Company, San Francisco, Calif.

Filed Sept. 27, 1971, Ser. No. 183,866
Int. Cl. B65d 87/00
U.S. Cl. 220—1.5 11 Claims

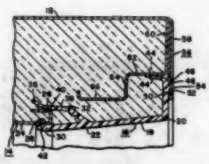
A horizontally elongated, trussed-side container for supporting and containing long structural steel members, rods, pipe, etc., which container is adapted to be lifted by conventional overhead lifting beams of different standard lengths with the container connectable at its ends, and at points spaced from the ends, and which container includes shear supporting members and reinforcing members located and arranged to be in tension during normal lifting, vessel stowage, and highway transit conditions and to provide sufficient compressive restraint for the stationary trailer parking condition on the vertical trailer landing legs. The container has an open top and an open end and a wall at the leading end (relative to forward movement when on a land vehicle) to prevent forward shifting of the load during emergency brake applications, and it has posts capable of supporting at least five superposed, fully loaded, 40 foot I.S.O. (International Standards Organization) type in standard container cellular vessels, and end frame design providing racking load strength for lateral loading from cargo and above deck stacking condition in excess of standard 40 foot container requirements.

3,768,687

PLASTIC BREAKER STRIP

Donald J. Spencer, 1572 Fall Brook Rd., Columbus, Ohio

Continuation of Ser. No. 17,116, March 6, 1970, abandoned.
This application Sept. 7, 1971, Ser. No. 178,359
Int. Cl. B65d 25/18
U.S. Cl. 220—9 R 1 Claim



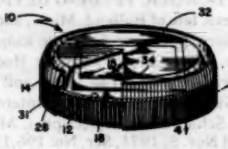
A simple plastic breaker strip, formed by molding, is provided by the invention and has a forked end including two substantially parallel, extending fingers which are attached to the inner liner of the refrigeration cabinet and a bent tanged end which is compressingly inserted in an open channel configuration in the outer shell. A series of locking barbs are located at the junction of the tang member with the main portion of the plastic breaker strip and these locking barbs are adapted to be insertingly nested and lockingly held in a series of rectangular holes extending through a single thickness of the outer shell so that they are not visible from the exterior of the refrigerant cabinet.

3,768,688

CAP

Wolfgang Gerd Linke, Berlin, Germany, assignor to The Gillette Company, Boston, Mass.

No Drawing. Filed Sept. 8, 1971, Ser. No. 178,735
Int. Cl. B65d 41/04, 41/62
U.S. Cl. 220—23 1 Claim



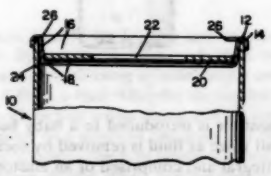
A package comprising a cover for a container and a transparent flexible overcap friction-fit to the cover. The overcap has a portion spaced from the cover to define an enclosure, and an item is contained in the enclosure and is accessible by separating the overcap from the cover.

3,768,689

ENVIRONMENTAL COLLECTION BOX

Joseph Gauthier, Jr., 69½ Pearl St., Webster, Mass.

Filed Apr. 24, 1972, Ser. No. 247,155
Int. Cl. B65d 39/00, 41/00, 43/00
U.S. Cl. 220—24 A 7 Claims



A container having a bottom, a continuous side wall, and an open top with a rim including an inwardly and downwardly

inclined flange and an abutment terminating the flange; with a rigid flat closure of the shape of the rim and flange, said closure having a diameter greater than that of the flange at its inner edge and less than the diameter of the rim, said closure distorting the flange and having a friction fit therewith when pressed into it, the abutment serving to prevent the closure from being pressed too far into the container.

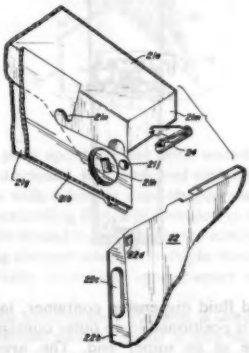
This container may be made for the purpose or it may be made by cutting the top out of a discarded beer or soft-drink can.

3,768,690

RAINTIGHT ENCLOSURE HAVING PARTICULAR COVER MOUNTING MEANS

Tadeusz J. Rys, Monroe, Ohio, assignor to Square D Company, Park Ridge, Ill.

Filed Nov. 1, 1971, Ser. No. 194,349
Int. Cl. B65d *43/16*
U.S. Cl. 220—38 **2 Claims**



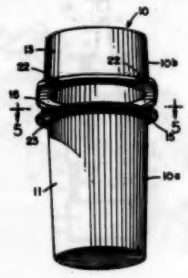
The enclosure comprises a rear wall, a pair of opposite side walls, a bottom wall, a flanged cap providing a top wall, and a front cover having side flanges pivotally connected respectively to the side walls at their upper front portions by removable spring-type fasteners.

3,768,691

DISPOSABLE FLATWARE CONTAINER

Richard E. Cobb, Western Springs, and Richard W. Lanigan, Arlington Heights, both of Ill., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Mar. 6, 1972, Ser. No. 232,012
Int. Cl. B65d *41/06*
U.S. Cl. 220—40 R **7 Claims**



A disposable container for single-use flatware, the container having a base section and a cover section formed of plastic material. The length of the base section is substantially less than that of the flatware contained therein; hence, when the cover section is removed, the ends of the flatware are exposed. Insertion of the base section into the recess of a conventional holder is achieved by gripping the cover section of the assembly and, after the base section is in place with its perimetric flange resting upon the mouth of the recess, the cover section may be disengaged and removed to expose the handles of the flatware.

3,768,692

CONTAINER EASY-OPEN STRUCTURE

William T. Saunders, Weirton, W. Va., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Sept. 18, 1970, Ser. No. 73,344
Int. Cl. B65d *17/20*
U.S. Cl. 220—54 **9 Claims**

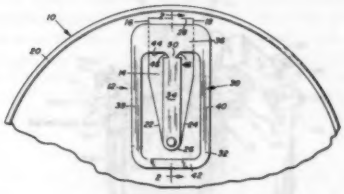
Double-lever action, easy-open container structure with a unitary rivet securing the working end of a tab opener in aligned relationship with a starter section of an outer scoreline which defines a removable area. The direction of the outer scoreline from the narrow starter section through a wedge-shaped portion provides for a shearing action along the scoreline in place of the tensile stress breakage required by the prior art. Arcuate ribs assist in maintaining the shearing action by preventing bulging of the removable wall portion. A chisel pointed tab opener concentrates force to facilitate initial rupture.

3,768,693

RETAINABLE TEAR-AWAY TAB FOR CONTAINER

Dick Spraker, and Paul E. Baker, both of Wichita, Kans., assignors to Envir-O-Tab, Inc., Wichita, Kans.

Filed July 13, 1971, Ser. No. 162,056
Int. Cl. B65d *17/20*
U.S. Cl. 220—54 **1 Claim**



This disclosure relates to a tear-away tab opener which is retained on the container wall after an opening has been formed in the wall to permit the container to be emptied. A closure strip or tongue in the top wall of the container is defined by a discontinuous scored line and a bend line extending between the ends of the scored line. An operating handle overlying the closure strip includes a pull ring with a stem secured at one end to the inside edge of the pull ring, and ex-

tending inwardly therefrom so that the stem is completely encircled by the pull ring. The stem extends along the closure strip so that its other end terminates at the leading edge of the closure strip and is secured thereto. The stem is used to sever the closure strip along the scored line and force the strip inside the container to provide the opening.

3,768,694

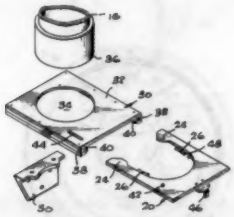
WEDGING ACTION CUP DISPENSER

Walter L. Miller, 6356 Castello Ave., Van Nuys, Calif.

Division of Ser. No. 832,648, June 12, 1969, abandoned. This application May 28, 1971, Ser. No. 148,184

Int. Cl. B65g 59/10

U.S. Cl. 221—221 5 Claims



A drinking cup dispenser having a storage receptacle for containing a stack of cups in nesting engagement, and cup dispensing means movable through a dispensing stroke for dispensing the cups in succession from one end of the stack while supporting the remaining cups in the receptacle. The dispensing means includes a wedge formation which enters between the rim beads on the end cup and the next cup in the stack to forcibly separate the end cup from the stack with a wedging action and thereby release the end cup for removal from the dispenser while supporting the remaining cups within the storage receptacle.

3,768,695

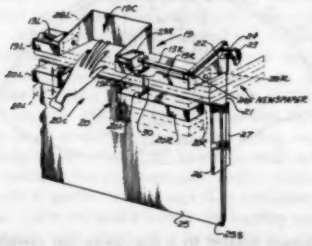
METHOD AND APPARATUS FOR CONTROLLABLY AND SEQUENTIALLY DISPENSING ARTICLES, ONE AT A TIME

Rune S. Pearson, 855 W. El Repetto Dr. 22, Monterey Park, Calif.

Filed May 3, 1972, Ser. No. 249,825

Int. Cl. B65g 59/02

U.S. Cl. 221—227 16 Claims



The dispenser is adapted to sequentially allow the withdrawal of articles such as newspapers, periodicals, magazines and the like, one at a time. The dispenser stores the articles to be vended on a carrier provided with a suspension system for controllably synchronizing the system to position the topmost article to be dispensed. The article is dispensed through a pair of control gates constructed to permit the customer to withdraw only a single article therethrough. The authorized withdrawal is accomplished following the correct value of coins being received by a coin mechanism for permitting access to the interior of the compartment for withdrawing an article through the gate control elements.

3,768,696

PRESSURIZED FLUID DISPENSING CONTAINER

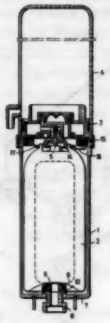
Asmund Sigurd Laerdal, Stavanger, Norway

Filed Aug. 6, 1971, Ser. No. 169,730

Claims priority, application Germany, Aug. 11, 1970, P 20 39 826.9

Int. Cl. B65d 83/14

U.S. Cl. 222—29 6 Claims



A pressurized fluid dispensing container, in which a fluid pressure vessel is positioned in an outer container and carries an outlet valve at its upper end. The lower end abuts, preferably via a pressure piece which may be threadably adjustable, the bottom wall of the vessel, while the outlet valve is located adjacent the outer container lid, so that, should said vessel expand axially due to increase in temperature, the valve is depressed, releasing some of the fluid. The quantity of fluid in the vessel may be measured by a spring balance arrangement.

3,768,697

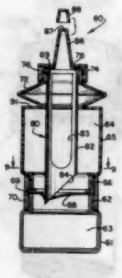
MULTI-PRODUCT DISPENSER PACKAGE

Nathan B. Lerner, Chicago, Ill., assignor to W. Braun Company, Chicago, Ill.

Filed Apr. 20, 1971, Ser. No. 135,569

Int. Cl. B67b 7/26

U.S. Cl. 222—80 7 Claims



A multi-product dispenser package having two or more compartments separated by a partition or diaphragm wall, each compartment containing a different material or product and having means which when actuated will break, rupture or

puncture the separating wall to permit the materials or products to comingle so that the comingled material or product may be dispensed from said container.

3,768,698

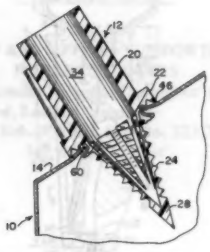
POUR SPOUT

Richard L. Corty, Sr., Barrington, and Edward P. Iversen, Fox River, both of Ill., assignors to Cor-Sen Plastic, Ltd., Chicago, Ill.

Filed Sept. 20, 1971, Ser. No. 182,042

Int. Cl. B67b *7/26*

U.S. Cl. 222—91 **7 Claims**



An integral pour spout for use with waxed paper cartons and the like is disclosed. In a preferred embodiment a tubular spout connects with a hollow cone-shaped piercing element, and a radially extending flange is provided at the juncture. A rootless multiple thread is provided at the exterior of the cone-shaped piercing element and the multiple thread is supported by interior axially extending, spaced-apart ribs within the cone.

The tip of the cone-shaped element is used to puncture a waxed paper carton, and the spout is then threaded into the top of the carton. The adjacent waxed paper is threaded and forced against sealing elements on the flange. Although the preferred embodiment appears to be complex, it is an easily molded integral piece which provides adequate but controlled flow, and seals firmly without drip or dribble between the spout and the carton.

After the carton is empty, the spout is unthreaded and can be reused with another carton.

3,768,699

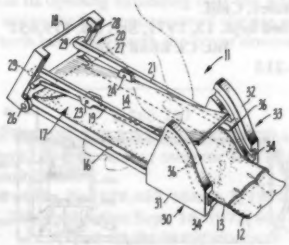
SQUEEZE DISPENSER FOR FLEXIBLE PACKAGES

Harlan Karl Robe, Jr., c/o Robe Associates, 1833 Edgewood Dr., Palo Alto, Calif.

Filed June 3, 1970, Ser. No. 43,140

Int. Cl. B65d *35/28*

U.S. Cl. 222—103 **15 Claims**



A squeeze dispenser utensil for holding a flexible container and dispensing the contents therefrom, comprising two relatively flat squeeze plates mounted through a suitable linkage means and guides therefor for providing an operative sequence of first bringing the backs of the two plates relatively together to dispense the material from the container in a back-to-front operation; said plates being preferably built with opposed convex surfaces for retaining a forwardly progressing seal, with the plates being flexible and the linkage and guide system being constructed for moving the upper plate forward relative to the lower plate during the dispensing operation. A preferred form of the invention also provides for closure means for multi-time usage and a storage construction for holding the partly full container.

3,768,700

CLOSED, PREFERABLY SPHERICAL CONTAINER

Fedor Stranicky, Solna, Sweden, assignor to AB Svensk Industris Konstruktions-och Berakningskontor Sikob, Solna, Sweden

Filed Nov. 9, 1971, Ser. No. 197,107

Claims priority, application Sweden, Nov. 10, 1970, 15184/70

Int. Cl. B65d *37/00*

U.S. Cl. 222—107 **10 Claims**

A closed, preferably spherical container of rigid material, comprising a top portion bulging inwards and provided with an opening means, and a bottom portion adapted to be snapped inwards a distance thereby displacing said top portion to spherical shape.

3,768,701

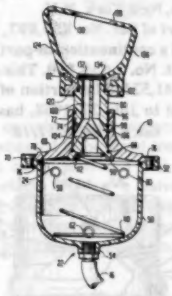
LIQUID DISPENSING SYSTEM AND RECEPTACLE THEREFOR

Vernon E. Leas, and Jeffrey Alan Leas, both of Warrington, Pa., assignors to Diverse Ventures Corporation, Phoenix, Ariz.

Filed June 20, 1972, Ser. No. 264,611

Int. Cl. B67d *5/56*

U.S. Cl. 222—129.4 **19 Claims**



The system includes a plurality of receptacles serially connected one to the other between a gas pressure source, for example air or CO_2 under pressure, and a dispensing faucet. Each receptacle includes a cup-shaped body having a cover with an opening in which is slideably mounted a valve member. The member has a pair of discrete side-by-side

passages terminating at their upper ends in a funnel which receives the neck of a bottle inverted over the receptacle. The passages terminate at their lower ends in inclined laterally projecting passageways. The valve member is movable from a first normally closed position into a second valve open position by downward pressure on the inverted bottle which is maintained by a leaf spring bearing against the bottom of the inverted bottle. Gas under pressure flows through one of the passages into the bottle and liquid under pressure flows through the other passage into the receptacle for communication with the dispensing faucet. The serially connected receptacles are provided for dispensing different liquids. Valves provide measured pours of liquid from the faucets. The quantity of liquid dispensed for each pour can be selected among a number of predetermined quantities. Counters are provided for counting each measured pour.

3,768,702

TONER SUPPLY MEANS FOR ELECTROSTATIC REPRODUCING MACHINE

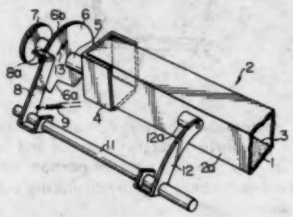
Sakae Fujimoto, Tokyo, Japan, assignor to Ricoh Co. Ltd., Tokyo, Japan

Filed May 4, 1972, Ser. No. 250,153

Claims priority, application Japan, May 10, 1971, 46/31026

Int. Cl. B67d *5/64*

U.S. Cl. 222—167 **3 Claims**



A means for supplying toner to a developer tank by giving an impulsive change to the air pressure in a disposable toner container which impulsive changes generated by striking a side surface of the container with a hammering member, said container being usually provided with a discharge mouth consisting of a plurality of small exit holes.

3,768,703

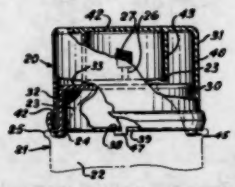
SAFETY COVER CAP FOR AN AEROSOL CONTAINER OR THE LIKE

Isral J. Markowitz, Closter, N.J., assignor to Stem Development Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 850,897, Aug. 18, 1969, Pat. No. 3,595,427, and a continuation-in-part of Ser. No. 19,228, March 13, 1970, Pat. No. 3,655,100. This application May 10, 1971, Ser. No. 141,524. The portion of the term of this patent subsequent to July 27, 1988, has been disclaimed.

Int. Cl. B65d *51/18*

U.S. Cl. 222—182 **9 Claims**



A safety cover cap which presents a unitary appearance and is freely rotatable without affording access to the container contents, but is of plural parts and is separable by simple but deliberate manipulation.

3,768,704

FLUID DISPENSER

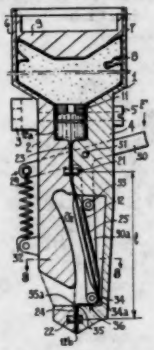
Rene Beguin, Chene-Bougeries, Switzerland, assignor to Test Societe anonyme d'Etudes techniques, Chene-Bougerus, Switzerland

Filed Oct. 10, 1972, Ser. No. 295,805

Claims priority, application Switzerland, Oct. 26, 1971, 15615/71

Int. Cl. B65d *37/00*; G01f *11/10*

U.S. Cl. 222—207 **7 Claims**



A fluid dispenser comprises a pressurised fluid reservoir connected to one end of which is a flexible flattenable tube the other end of which forms a dispensing outlet. The tube is supported intermediate its ends by an upstream and a downstream support of a frame the section of the tube between these supports being of greater length than the spacing between these supports and being a floating section movable in a space provided by the frame. The floating section can occupy a position in which a major portion thereof extending from the upstream support is inflated by the pressurised fluid and is sealed at its downstream end by a fold in the tube and can be moved from this position by a roller movable in said space in such a way as first to form a fold near the upstream end of the free section sealing a body of fluid in the tube and then to displace the inflated section to open out the folds at the downstream end of the free section to allow the body of fluid to pass from the dispensing outlet of the tube. The roller in the final stages of its dispensing movement stretches the free section of the tube over a convex surface to expel the fluid from the tube. During return movement of the roller the free section of tube is sealed adjacent its downstream end before the tube is again inflated.

3,768,705

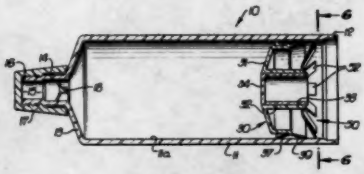
DISPENSERS FOR FLUENT MASSES

Walter B. Spatz, Santa Monica, Calif., assignor to Spatz Corporation, Venice, Calif.

Filed Sept. 13, 1971, Ser. No. 179,651

Int. Cl. B65d *37/00*

U.S. Cl. 222—213 **4 Claims**



A pliant, elastic container for toothpaste, cream, or other fluent materials has a forward outlet or discharge portion, a

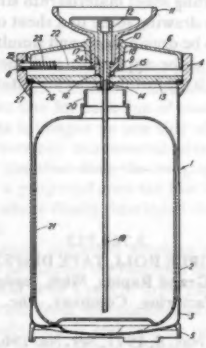
one-way follower in the container being disposed at the rear of the fluent material and sealingly engaging the container wall, the one-way follower being moved automatically by ambient air pressure toward the outlet after each dispensing of the material, but gripping the container wall to prevent its retrograde movement during dispensing of the material, such dispensing occurring as a result of squeezing or deflecting the container at any point, including the region forwardly of the follower, directly at the location of the follower, the region rearwardly of the follower, and at the discharge portion of the container, the deflecting force at such discharge portion being applicable in a direction axially or transversely of the container.

3,768,706

METHODS OF AND APPARATUS FOR DISPENSING POTABLE LIQUIDS

Arnold M. Hill, London, England, assignor to Whitbread & Company Limited, London, England

Filed Feb. 3, 1972, Ser. No. 223,212
Int. Cl. B67d *1/04*
U.S. Cl. 222—325 **8 Claims**



Apparatus for dispensing a potable liquid from a container which has a top opening but is unable to withstand an unbalanced internal pressure, comprising a casing having a removable cover extending over an opening of such a size that the container can be inserted through it into the casing, a union for the connection of a supply of gas under pressure to the casing to produce a super-atmospheric pressure in the casing and an outlet tube which extends downwards in the casing in a position in which, in use, it extends into and near to the bottom of the container through its top opening. Preferably the casing has its opening extending over the whole area of its top and the union for the connection of the gas supply and the outlet tube both extend through the cover downwards into the casing.

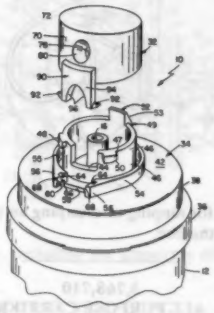
3,768,707

PRESSURIZED DISPENSING PACKAGE

Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Boston, Mass.

Division of Ser. No. 120,467, March 3, 1971, Pat. No. 3,735,785. This application Sept. 18, 1972, Ser. No. 290,071
Int. Cl. B65d *83/00*
U.S. Cl. 222—402.13 **9 Claims**

A pressurized dispensing package system includes two dispensing packages, each package including a projecting discharge passage structure. Transfer structure defines a closed passage that provides communication between the two discharge passage structures and interconnecting structure includes indexing means that permits the passage structures to be brought into communication only when the contents of the two packages are such that mixing of the contents is desirable,



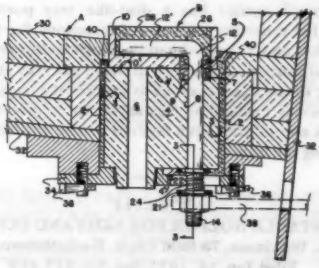
and latching structure for maintaining the transfer structure and the packages in proper position relative to each other for transfer of material from one package to another in a refilling operation.

3,768,708

ROTARY STOPPER FOR MOLTEN METAL POURING

Raymond J. Domulewicz, Sr., 693 Bauernschmidt Dr., Baltimore, Md.

Filed July 22, 1971, Ser. No. 165,157
Int. Cl. B22d *37/00*
U.S. Cl. 222—557 **3 Claims**



A valve for ladles carrying high temperature molten metals having a valve unit adapted to be fixed into an opening in the ladle, the valve unit being provided with a stationary block having its upper surface forming a valve seat, including a metal outlet opening therethrough from its upper to its lower surface and a valve member movable horizontally over the upper surface of the block to cover and uncover the metal outlet opening therein.

3,768,709

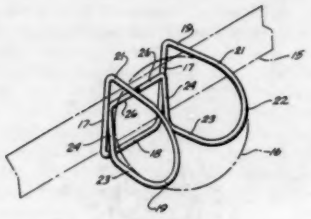
TENNIS BALL HOLDER

William C. Kinard, 3710 Alder Ln., Pasadena, Calif.

Filed Mar. 29, 1971, Ser. No. 129,048
Int. Cl. A45c *11/00*
U.S. Cl. 224—5 D **8 Claims**

A holder for elastically gripping a tennis ball and capable of being secured to an article of clothing is described. In a

preferred embodiment the holder may be bent from wire in the form of a pair of loops for holding the ball and a pair of U-



shaped portions for nipping or crimping an article of clothing, such as a belt or the like.

3,768,710

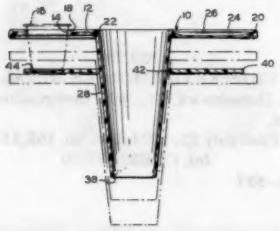
ALL PURPOSE CARRIER

William H. Eggers, 3498 Vine Maple, Eugene, Oreg.

Filed June 28, 1971, Ser. No. 157,422

Int. Cl. A47g *26/06*

U.S. Cl. 224—48 A **1 Claim**



A onepiece carrier has a disc-like tray portion having openings for receiving cups and depressions for sandwiches and the like, and a tapered handle projects downwardly from the central portion of the tray to make the tray stackable. A lower disc of the handle serves to support the cups. A loading support having upstanding legs serves to receive the tray for loading. A second tray has a tapered handle and also h . posts for standing the tray.

3,768,711

ADJUSTABLE HOLDER FOR SKIIS AND SKI POLES

Charles H. Wilkinson, 78 Bald Eagle, Hackettstown, N.J.

Filed Jan. 14, 1972, Ser. No. 217,819

Int. Cl. B65d *69/00*

U.S. Cl. 224—45 S **2 Claims**

An adjustable holder for skiis and ski poles including a longitudinally extending cord having a pair of adjustable stop means mounted thereon. The adjustable stop means may be moved relative to the cord and are adapted for engagement with the cord ends to form two enlarged adjustable loops which are capable of being snugly adjusted around an assembled package of skiis and ski poles.

3,768,712

PROCESS FOR CUTTING SHEET MATERIAL

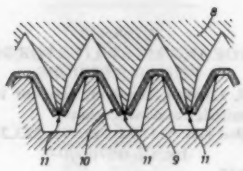
Pierre Imbert, Fleury-les-Aubrais, France, assignor to Service D'Exploitation Industrielle Des Tabacs Et Des Allumettes, Paris, France

Division of Ser. No. 744,876, July 15, 1968, Pat. No. 3,628,409. This application Mar. 17, 1971, Ser. No. 125,344

Claims priority, application France, July 19, 1967, 67114728; July 24, 1967, 67115317

Int. Cl. B26d *7/14*

U.S. Cl. 225—3 **12 Claims**



A process of cutting sheet material into strips, including the steps of applying a drawing force to a sheet of said material to cause said sheet to be drawn along and simultaneously causing restraining forces to be applied to said sheet on either side thereof to restrain it against the drawing action of said drawing forces.

3,768,713

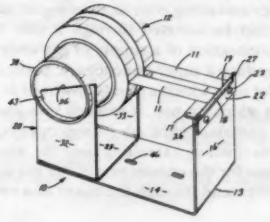
MULTIPLE ROLL TAPE DISPENSER

Donald W. Lash, Grand Rapids, Mich., assignor to The E. O. Bulman Manufacturing Company, Inc., Grand Rapids, Mich.

Filed Nov. 8, 1971, Ser. No. 196,389

Int. Cl. B26f *3/02*

U.S. Cl. 225—34 **9 Claims**



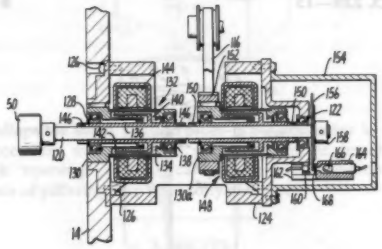
A multiple roll tape dispenser having base means with upwardly extending tape severing edge means and a pair of spaced, substantially parallel plates rigidly secured to and extending upwardly from the base means. Hollow cylindrical roll support means has a pair of spaced slots in one side thereof, each slot defining a plane substantially perpendicular to the central axis of the cylinder, the upper edges of said plates being slideably receivable into said slots. Cooperating releasable lock means on said cylinder and said plates positively oppose relative movement between said cylinder and said plates toward and away from the tape severing edge means.

3,768,714

MICROFILM PRINTER

James E. Applequist, San Jose, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Division of Ser. No. 864,036, Oct. 6, 1969, Pat. No. 3,688,656
This application June 3, 1971, Ser. No. 149,734
Int. Cl. B65h 23/18
U.S. Cl. 226—37 3 Claims



A microfilm printer is disclosed for printing computer output data on microfilm. The film is advanced along a transport incrementally one line for each line of computer output data, and a line of data is imaged on one side of the film while the film is stopped between incremental advances. Periodically, generally much less often than the imaging of data lines, the image of a form is projected onto the film from the other side so that the film where finally developed displays the data entered in the form.

The film transport disclosed employs a new incremental drive capstan for advancing the film on a line by line basis past an exposure station, with a pair of drive capstans employed to transport film to and from the incremental drive capstan from and to, respectively, supply and take-up reels. The incremental drive capstan is started and stopped by electromagnetic brakes in which the starting and stopping times of the capstan are controlled by removal of electrical current from one of the brakes.

A separate lens system is employed for projecting each of the data and form images onto the film to facilitate matching the data to the form.

The film transport is controlled to permit the film to advance a multiple number of data lines between times when the film is stopped at a data line to speed up the printer's response where no data is provided for some lines of the form.

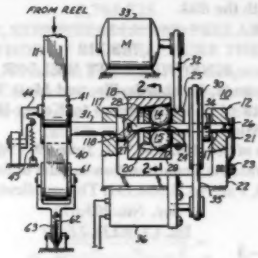
3,768,715

PLANETARY DIFFERENTIAL AND SPEED SERVO

Stanley D. Tout, Arcadia, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed May 1, 1972, Ser. No. 249,046
Int. Cl. B65h 23/18
U.S. Cl. 226—40 20 Claims

A planetary differential employs a longitudinal shaft having a restricted portion at least two balls directly engaging the longitudinal shaft at said restricted portion forming an inner race. The differential includes further an outer race having a taper engaged by the balls and a cage for the balls. A first rotary input is provided to one of the inner race, outer race, and cage. A secondary rotary input is provided to another of the inner race, outer race, and cage. A rotary output is provided to yet another of the inner race, outer race, and cage. The inner race and outer race are mounted for rotary movement.



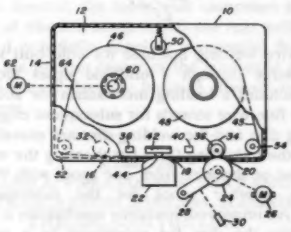
A servo system, including the planetary differential, is also disclosed.

3,768,716

ENDLESS LOOP TAPE CASSETTE

Cedric R. Bastiaans, Verona, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 18, 1972, Ser. No. 254,692
Int. Cl. B65h 17/20
U.S. Cl. 226—113 8 Claims



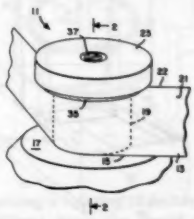
Described is an endless loop magnetic tape cassette designed for tape speeds as high as 120 inches per second or higher, and capable of delivering either short messages which repeat, or capable of a continuous test signal.

3,768,717

SPRING BIASED TAPE GUIDE WITH MEANS FOR DISTRIBUTING TAPE EDGE FORCES ALONG THE TAPE LENGTH

Guido Salcedo, Milpitas, Calif., assignor to Echo Scene Corporation, Mountain View, Calif.

Filed Feb. 7, 1972, Ser. No. 223,912
Int. Cl. B65h 27/00
U.S. Cl. 226—198 2 Claims



A guide for tape wherein edgewise force, responsive to irregularities in tape width, is exerted and distributed on tape

wrapped about the guide. The force is derived from a spring biased disk pushing against an unsupported tape edge in a manner wherein long tape edge segments of wider than average width receive a distributed force along the tape edge in contact with the disk.

3,768,718

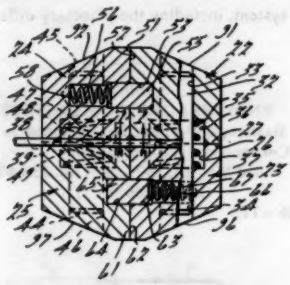
FINE WIRE BUTT WELDER

Walter J. Rozmus, Hubbardsville, and Matt T. Rozmus, Barneveld, both of N.Y., assignors to Kelsey-Hayes Company, Romulus, Mich.

Division of Ser. No. 834,781, June 19, 1969, Pat. No. 3,653,571, which is a continuation-in-part of Ser. No. 766,813, Oct. 11, 1968, Pat. No. 3,606,131. This application Dec. 1, 1971, Ser. No. 203,677

Int. Cl. B23k *21/00*

U.S. Cl. 228—3 **2 Claims**



A fine wire welding machine for cold butt welding small diameter wires through a multiple upset technique. The machine includes a loading mechanism for accurately positioning the fine wire strands for subsequent engagement with the welding dies and the welding dies are movable in a plane parallel to their abutting faces for shearing the wires and aligning the end of the wire from one spool with the end of the wire from another spool for the subsequent welding technique. An improved operating mechanism is incorporated for operating the dies for movement in a predetermined sequence whereby the dies first move into gripping relation with the respective wire ends, the dies then move together to upset the wire ends, next the dies release the wire ends while still held in the upset position and finally the dies retract from their upset position for a repeat of the cycle.

3,768,719

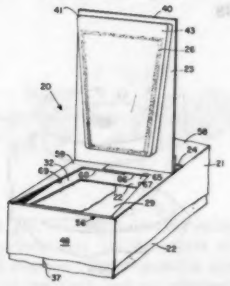
CARTON HAVING A BAG-LIKE LINER

Charles L. Johnson, Deer Park, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed July 16, 1971, Ser. No. 163,218

Int. Cl. B65d *5/56, 25/16*

U.S. Cl. 229—14 B **13 Claims**



A container comprising a carton having a freshness-preserving liner disposed therein wherein superimposed apertures having substantially wholly die-cut lineaments are opened in said carton and said liner substantially simultaneously upon opening of the container.

3,768,720

FLAT FOLDABLE CARTON HAVING A SUPPORTED INTERMEDIATE TRAY

Patrick L. Bundy, Battle Creek, Mich.

Continuation-in-part of Ser. No. 54,997, July 15, 1970, Pat. No. 3,700,161. This application Nov. 18, 1971, Ser. No. 199,916

Int. Cl. B65d *5/36, 5/46*

U.S. Cl. 229—15 **8 Claims**

A carton is provided which may be prepared from an integral blank and which when properly glued together, may be stored in flat folded condition. The folded carton may be quickly erected to form a carton in the form of a polygonal prism having a closed bottom and another end which is readily closable by interlocking a plurality of flaps.

A separate tray is provided which is inserted into the carton at an intermediate position. The side walls of the carton are suitably cut and scored to provide tabs which, upon erection of the carton, are punched inwardly to provide vertically oriented supports for the tray.

3,768,721

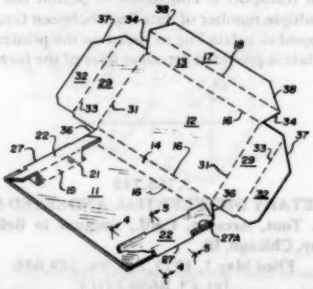
CUSHIONED SHIPPING FOLDER

John L. Carpenter, Anderson, and Charles R. Ostler, Shirley, both of Ind., assignors to Container Corporation of America, Chicago, Ill.

Filed June 8, 1972, Ser. No. 260,913

Int. Cl. B65d *5/02*

U.S. Cl. 229—40 **1 Claim**



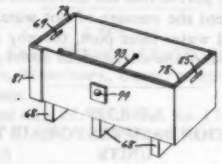
A cushioned shipping folder for books or the like is characterized by a pair of end cells of triangular configuration with an extra reinforcing ply extending diagonally alongside the cell to cause the cell to be resistant to crushing or other deformation. The triangular cross section cell is so constructed that a distal edge thereof together with distal edges of a main panel of the folder is caused to be held snugly in a line of fold of the reinforcing ply of the cell.

3,768,722

SMALL VOLUME PILFER PROOF CONTAINERS

Julius B. Kupersmit, 145-80 229th St., Springfield Gardens, N.Y.

Filed Feb. 8, 1972, Ser. No. 224,431
Int. Cl. B65d 45/16
U.S. Cl. 229—47 1 Claim



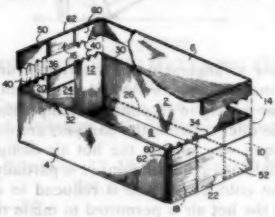
A collapsible small volume pilfer-proof container in which the accessible walls may be sealed by means penetrating through openings therein carrying a seal, whereby the presence of pilfering may be readily detected.

3,768,723

CARTON

Rolf A. Samsing, Braintree, Mass., assignor to The Gillette Company, Boston, Mass.

Filed June 2, 1971, Ser. No. 149,157
Int. Cl. B65d 17/24, 71/00
U.S. Cl. 229—51 TS 2 Claims



A carton of the type customarily used for shipping articles, and opened by cutting with a sharp instrument, characterized by an arrangement of zig-zag slots disposed on end flaps such that a double thickness of end flaps may be cut with substantially the same ease as the single thickness sides of the carton.

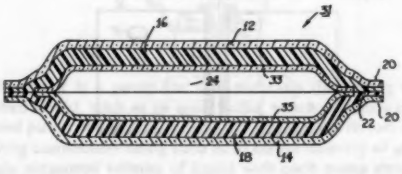
A blank from which the above carton is assembled.

3,768,724

CUSHIONED SHIPPING BAG

Walter Jennings Hill, P.O. Box 5648, High Point, N.C.

Filed Dec. 20, 1971, Ser. No. 209,747
Int. Cl. B65d 31/02
U.S. Cl. 229—53 1 Claim



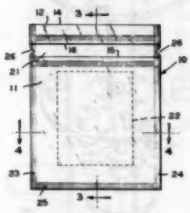
A shipping bag has two outer bag walls and at least two layers of a cushioning material which provide means for sealing the outer bag walls together at the peripheral edges thereof. A method for making the bag is also disclosed.

3,768,725

BREATHABLE, STERILIZABLE AND PEELABLE POUCH AND METHOD OF MANUFACTURE THEREOF

Joseph F. Pilaro, Princeton Junction, N.J., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Nov. 11, 1971, Ser. No. 197,683
Int. Cl. B65d 33/16
U.S. Cl. 229—66 8 Claims



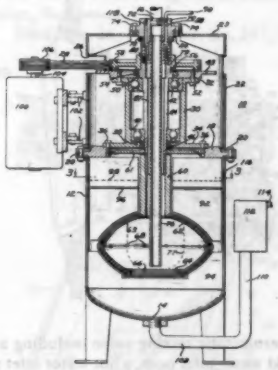
A breathable, sterilizable and peelable pouch produced from laminated plastic layers having diverse characteristics and a method of manufacture thereof. The pouch is constituted by front and rear walls heat sealed along the side and bottom edges thereof; the front wall comprises two spaced portions, one of which is integral with the rear wall, united by a spun-bonded polyolefin panel. It is essential that the heat seal between the interior layers of the laminated material be substantially stronger than the bonding strength between the laminated layers.

3,768,726

METHOD AND APPARATUS FOR THE REMOVAL OF ENTRAINED GASES FROM MINERAL SLURRIES, PULPS, LIQUIDS, AND THE LIKE

James C. Hale, and Edward P. Herrick, both of Boulder, Colo., assignors to Autometrics Co., Boulder, Colo.

Filed May 6, 1970, Ser. No. 34,949
Int. Cl. B04b 5/08
U.S. Cl. 233—16 14 Claims



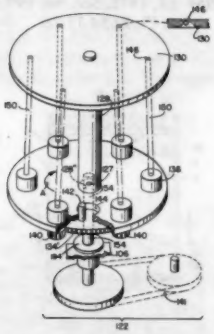
A deaerator comprising a rotating chamber having a nozzle exhausting by centrifugal force the liquid of an entrained gas/liquid feed into an outer liquid body while the entrained gases are withdrawn from the interior of the chamber through a separate gas outlet under a reduced pressure.

3,768,727

CENTRIFUGE WITH SAMPLE HOLDING MEANS FOR SEDIMENTATION STUDY

Oscar Proni, Hollywood, Fla., assignor to Coulter Electronics Inc., Hialeah, Fla.

Filed Oct. 22, 1971, Ser. No. 191,768
Int. Cl. B04b 9/12
U.S. Cl. 233—26 **13 Claims**



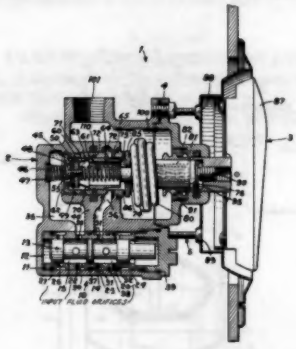
An improved centrifuge apparatus for blood sedimentation study is described for applying a G force in the range of 6.25 to 8 G laterally to the long axis of plural test sample columns arranged substantially vertically in holders provided on the centrifuge head. Each of the sample columns are rotated about their own vertical axes between each periodic spin cycle of said centrifuge head and only between applications of said G force by means of inertia. A test operation using four 45 second duration applications of said G force is described with rotation of the columns being effected by reversal of the centrifuge head at the end of each 45 second force application.

3,768,728

FAIL-SAFE THERMOSTATIC MIXING VALVE

William J. Blank, Bayside, N.Y., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Mar. 27, 1972, Ser. No. 238,551
Int. Cl. G05d 11/16
U.S. Cl. 236—12 R **8 Claims**



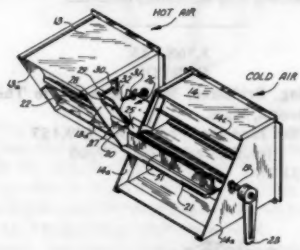
A fail-safe thermostatic mixing valve including a valve casing having a cold water inlet port, a hot water inlet port, and a mixed water outlet port. A thermostat controlling the proportions of said hot and cold water, thereby regulating the temperature of said mixed water is positioned within said casing. A reciprocating piston is coupled to said thermostat and a hot seat disc is coupled thereto for controlling the input flow of said hot water. In the event of thermostat failure a hollow cylindrical piston, coupled to said hot seat disc and positioned to channel the hot water passed thereby to said mixed water outlet port is moved by a spring coupled between said hot seat disc and the valve casing causing one end of said hollow cylindrical piston to abut a mixed water seat disc thereby preventing the passage of hot water therethrough to said mixed water outlet port notwithstanding the fact that the hot water seat disc no longer prevents the input flow of said hot water. Additionally, the hollow cylindrical piston is positioned adjacent the cold water inlet port so that the movement of said cylindrical piston to prevent the passage of hot water therethrough also seals the cold water inlet port, thereby preventing the flow of any water out of the mixed water outlet port.

3,768,729

DELAYED ACTION DAMPERS FOR AIR TERMINAL UNITS

Frank J. Dean, Jr., Kansas City, Mo., assignor to Tempmaster Corporation, Kansas City, Mo.

Filed Aug. 12, 1971, Ser. No. 171,120
Int. Cl. F24f 13/04
U.S. Cl. 236—13 **8 Claims**



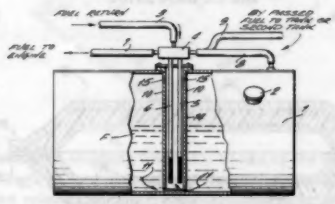
An air damper arrangement for a terminal unit that has separate positionable dampers located in the unit to provide for automatic air mixing in response to temperature requirements. In double duct systems, the dampers are mechanically linked in a unique way so that the hot air damper will not begin to open until the cold air damper is partially closed. In this manner, the cold air volume is reduced to a minimum quantity before the hot air is permitted to mixin the terminal unit. Another embodiment utilizes this linkage concept with terminal reheat bypass units to selectively control the dampers associated with the terminal unit heating coil thereby decreasing the volume of air bypassing the coil prior to utilization of same.

3,768,730

FUEL PRE-HEATER

James L. Campbell, Santa Barbara, Calif., assignor to Internation Research Corporation, Ann Arbor, Mich.

Filed Apr. 29, 1971, Ser. No. 138,622
Int. Cl. F02m 31/16
U.S. Cl. 236—93 **4 Claims**



A device for supplying pre-heated fuel to an engine is constructed which comprises means for conveying hot fuel which is not consumed in the engine into a primary fuel tank, means for mixing fuel already in the tank with the hot fuel and means

for conveying the mixed fuel out of the tank to the engine. The device includes a thermostatically controlled valve arrangement whereby when the temperature of the fuel in the fuel tank is such that the hot fuel returned from the engine is not needed in order to maintain a fuel temperature of fuel being supplied to the engine of about 90° F., the return hot fuel may either be bypassed into the supply of fuel in the primary tank or may be bypassed into a secondary fuel tank.

3,768,731

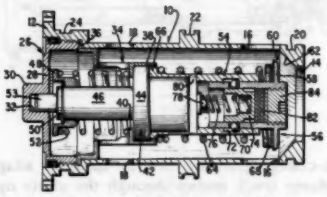
FAIL SAFE THERMOSTATIC SWITCH

Neal M. Lavado, Waterbury, Conn., assignor to Altair, Inc., Plymouth, Conn.

Filed Aug. 25, 1971, Ser. No. 174,877

Int. Cl. G05d *23/275*

U.S. Cl. 236—93 **5 Claims**



A thermostatic valve incorporates a second thermostatic element operative to close off the valve at a higher temperature if the primary thermostatic element fails.

3,768,732

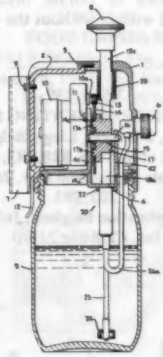
INTERMITTENT LIQUID METERING SYSTEM AND APPAPATUS

Russell R. Curtis, Indianapolis, and James E. Jung, Westfield, both of Ind., assignors to Curtis Dyna-Products Corporation, Westfield, Ind.

Filed Feb. 22, 1972, Ser. No. 227,967

Int. Cl. G01f *11/10*

U.S. Cl. 239—70 **13 Claims**



Disclosed is a pump for intermittently dispensing a pressurized liquid, such as an insecticide, which utilizes a cam actuated pump piston, the contour of the cam and its lost-motion driving connection being such as to assure delivery of an accurately measured volume of liquid with each pump stroke and minimizing wear on the cam and its follower. An adjustably positionable abutment determines one extremity of the pump piston stroke thus providing adjustability of the measured volume delivered by the pump with each stroke.

3,768,733

SPRAYING DEVICES

Jean Charles Yves Brenez, 149 Avenue du General-Leclerc 33, (Gironde) Pessac, France

Filed Apr. 12, 1972, Ser. No. 243,261

Claims priority, application France, Apr. 5, 1971, 7114241; Mar. 24, 1972, 7210557

Int. Cl. B05b *11/00*

U.S. Cl. 239—331 **6 Claims**

A spray device for spraying any product and more particularly insecticides and germicides comprising two telescopic tubes of synthetic material, movable relative to each other in a reciprocating motion causing air to be sucked in and forced out in order to expel the product while atomizing it, the inner tube comprising at its upper part a removable spray jet and the telescopic tubes defining between them a clearance allowing air to be drawn in from the outside during the elongation movement of the spray device, which movement is limited by two pins integral with the outer tube moving in grooves provided in the inner tube and said pins contacting abutments at the end of the stroke, the gap between the tubes being made concentrically constant by means of longitudinal guide bosses regularly spaced on the outer skirt of the inner tube whereas the outer tube is closed at its base by a base made integral with it.

3,768,734

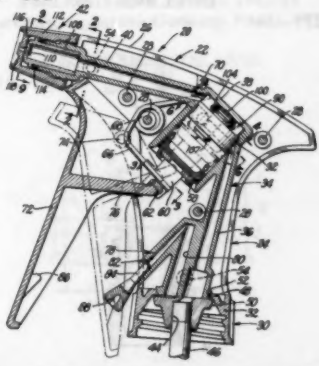
MANUALLY OPERATED SPRAYER

Irvin O. Anderson, Jr., South Pasadena, and Cecil G. Young, La Canada, both of Calif., assignors to Arrowhead Products Corporation, Hollywood, Calif.

Filed Apr. 26, 1972, Ser. No. 247,782

Int. Cl. B05b *1/32*

U.S. Cl. 239—333 **5 Claims**



A hand operated sprayer adapted to be threaded on a bottle, or other liquid container. A trigger-like handle actuates a

piston which pumps liquid from the container and discharges it through a nozzle, reversed flow being prevented by inlet and outlet checks in inlet and outlet passages respectively leading from the container to the cylinder and from the cylinder to the nozzle.

3,768,735

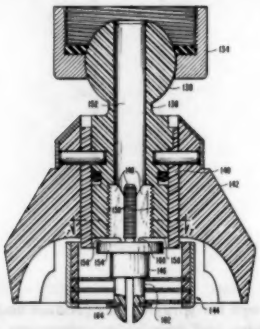
COMBINATION SPRAY AND AERATOR DEVICE

Irving A. Ward, 2709 La Cuesta Ave., Hacienda Heights, Calif.

Filed Jan. 7, 1972, Ser. No. 216,015

Int. Cl. E03c *1/84*

U.S. Cl. 239—428.5 **15 Claims**



A combination spray and aerator device is disclosed for attachment to a faucet and includes a deflector selectively movable between a stream deflecting position in which the water is caused to flow through an aerator assembly and a non-deflecting position in which the water flows unobstructed to a spray skirt. The deflector may comprise a sleeve axially displaceable between the deflecting and non-deflecting positions.

A filtering arrangement including a strainer cup positioned within a swivel ball at the upper extremity of the device prevents particles larger than a predetermined size from passing through the device.

To aid in providing a high quality aerated stream, the area of the flow passage is made progressively larger from the inlet to the discharge region of the device.

3,768,736

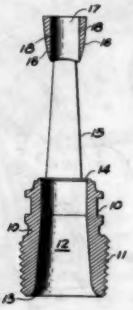
COOLING TOWER SPRINKLER NOZZLE

Lawrence J. Cox, Bedford Heights, Ohio, assignor to American LaFrance Inc., Willoughby, Ohio

Filed Apr. 3, 1972, Ser. No. 240,600

Int. Cl. B05b *1/26*

U.S. Cl. 239—504 **5 Claims**



A cooling tower sprinkler nozzle adapted to discharge water over a comparatively narrow and relatively long path is disclosed in which a pair of arcuate splitter elements are positioned in spaced relation to the discharge orifice of the nozzle to create oppositely disposed divergent streams which conform generally with the discharge pattern of the sprinkler nozzle.

3,768,737

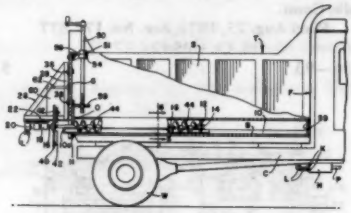
GRANULAR MATERIAL SPREADER

James R. Tobias, R. D. 1, Halifax, Pa.

Filed Sept. 5, 1972, Ser. No. 286,207

Int. Cl. A01c *15/00*

U.S. Cl. 239—666 **7 Claims**



A quick-change granular-material spreader adapted to fit standard dump truck bodies through the chute openings in their tail gates, and including an auger feed and spinner plate rotated by an hydraulic motor from a pump driven by the truck's own engine, the feed rate of the granular material and the distance it is broadcast being manually adjustable, and this rate also being affected by the rotation rate of the truck's engine, which is in turn affected by the gear in which the truck is presently being driven.

3,768,738

FLOTATION OF ARSENIC MINERALS FROM BORATE ORES

Dwight L. Sawyer, Boron, and Martin Wilson, Anaheim, both of Calif., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Oct. 21, 1971, Ser. No. 191,536

Int. Cl. B03b *1/02*

U.S. Cl. 241—24 **10 Claims**

Arsenic minerals, such as realgar, may be removed by flotation from hot slurries of borate ores, such as ulexite, colemanite and tincal with or without the aid of a flotation reagent.

3,768,739

APPARATUS FOR FRAGMENTING SCRAP METAL

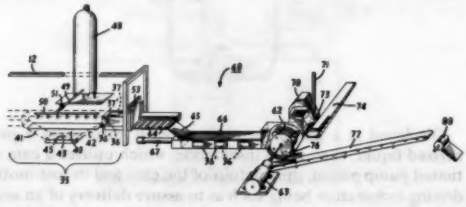
Robert Marie George, 2 Gaucet, Liege, Belgium

Continuation-in-part of Ser. No. 828,283, May 27, 1969, Pat. No. 3,643,873. This application Nov. 26, 1971, Ser. No. 202,293

Claims priority, application Belgium, July 25, 1968, 41,857

Int. Cl. B02c *21/00*

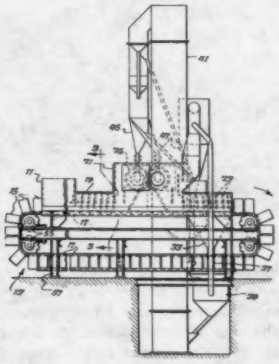
U.S. Cl. 241—65 **16 Claims**



Apparatus for fragmenting scrap metal comprises precompressing means for receiving the scrap metal and precom-

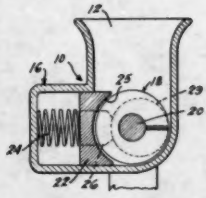
pressing same into metal blocks, cooling means for cooling the blocks and rendering them sufficiently brittle to be fragmented, and fragmenting means for fragmenting the cooled blocks into pieces of scrap. The cooling means cools the blocks down to a temperature between −60° C. and −120° C. and preferably between −80° C. and −100° C. by contacting the blocks with liquid nitrogen whereupon the blocks are sufficiently embrittled so that they may be easily fragmented by either further compression, or by the application of crushing and/or hammering forces of sufficient strength to fracture the cooled blocks.

3,768,740
RECLAMATION OF MOLDED SAND
James H. Carpenter, 212 Pangborn Blvd., Hagerstown, Md.
Filed Jan. 3, 1972, Ser. No. 214,700
Int. Cl. B02c *19/00*
U.S. Cl. 241—68 **10 Claims**



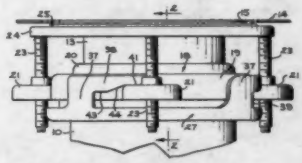
Lumpy molded sand from a shake-out operation is fed onto the upper section of an endless conveyor which moves the material through a stream of projected abrasive particles thereby granulating the lumps. The granulated sand and abrasive particles are conveyed to a separator which removes the grains of sand from the abrasive particles.

3,768,741
FOOD GRINDER
Archie W. Mills, 2941 S. Michigan Ave., Chicago, Ill.
Filed Aug. 4, 1971, Ser. No. 169,008
Int. Cl. B02c *18/30*
U.S. Cl. 241—82.1 **3 Claims**



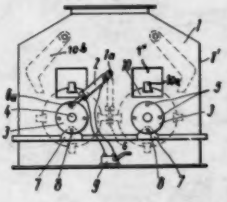
This invention provides an improvement in a food grinder including a hopper in the upper portion of the housing of the grinder and a worm feed screw rotatably mounted in the lower portion of the housing and communicating with the hopper and a perforated plate mounted on the front end of the housing. The improvement comprises: a spring-biased force member mounted on the housing adjacent to the worm feed screw, the force member being moveable toward and away from the periphery of the feed screw to alternately provide a food receiving pocket alongside the feed screw and to close this pocket; and a cam mounted on the feed screw and arranged to actuate the force member whereby when food is fed into the hopper and the feed screw is rotated to drive the food to the perforated plate, the force member pushes the food from the pocket into the feed screw to maintain the movement of the food to the perforated plate.

3,768,742
WASTE FOOD DISPOSER MOUNTING ASSEMBLY
John L. Preher, and John L. McClure, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Filed Aug. 26, 1970, Ser. No. 67,108
Int. Cl. B02c *18/42*
U.S. Cl. 241—100.5 **10 Claims**



A sink mount support assembly for a waste food disposer includes a pair of annular members having means thereon to enable engagement of the members, one with the other, when the members are brought together in axial alignment and one of the members is rotated with respect to the other. The means of engaging one of the members to the other provides a first holding position whereby the disposer is suspended beneath the sink but may be axially rotated to complete the plumbing connection thereto. A second relatively tight position is provided whereby the disposer is fastened firmly to the sink drain sleeve and prevented from thereafter rotating relative thereto. The means of engaging the two annular members of the sink mount support assembly is a quick connect arrangement requiring only that the rotatable annular member be manually driven in rotation a relatively short distance to complete the precedure of mounting a disposer to a sink drain sleeve, and it is a quick disconnect assembly inasmuch as the rotatable member may be thereafter manually driven to rotate in a direction opposite to the connecting rotation to free the disposer unit from the drain sleeve.

3,768,743
IMPACT COMMINUTOR
Bernhard Johannes Smits, Ahaus, Germany, assignor to Hazemag Hartzerkleinerungs-und Zement-Maschinenbau-Gesellschaft M.B.H., Munster, Germany
Filed Nov. 2, 1971, Ser. No. 194,823
Claims priority, application Germany, Nov. 2, 1970, P 20 53 693.0
Int. Cl. B02c *13/20, 13/26*
U.S. Cl. 241—101.2 **9 Claims**



One or more rotors of an impact comminutor are mounted within a housing. A hydraulic cylinder and piston unit is laterally offset from the axis of the rotor, or the axes of ad-

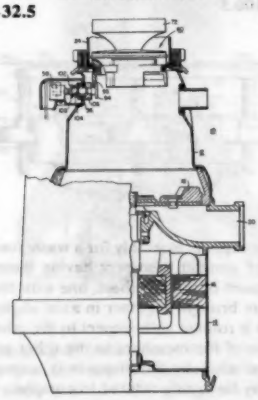
jacent rotors, being pivotably mounted on a wall of the housing. The free end of the unit can be releasably engaged with a respective rotor or a plate mounted fixedly on the shaft of the rotor and provided with circumferentially spaced apertures for connecting purposes. Thus, operation of the cylinder and piston unit serves to displace the rotor angularly to a desired angular position.

3,768,744

FOOD WASTE DISPOSER

Jack E. Bebinger, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 17, 1971, Ser. No. 209,279
Int. Cl. B02c *18/42*
U.S. Cl. 241—32.5 4 Claims



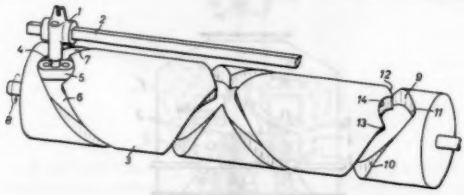
A batch type food waste disposer has a rotatable stopper including camming means which engages and moves the actuator of the operating switch inwardly when the stopper is turned to energize the food waste disposer. The rotatable stopper also includes a ledge arrangement which engages beneath laterally projecting portions on the food waste disposer so that the stopper is maintained vertically stationary so food being comminuted by the disposer does not tend to dislodge the stopper or interfere with its actuation of the food waste disposer actuating switch.

3,768,745

YARN GUIDING DEVICE FOR MACHINE WINDING CROSS WOUND BOBBINS

Emil Koller, Wadenswil, Switzerland, assignor to Maschinenfabrik Schweiter AG, Horgen, Switzerland

Filed June 19, 1972, Ser. No. 263,982
Claims priority, application Switzerland, July 7, 1971, 10059/71
Int. Cl. B65h *54/30*
U.S. Cl. 242—43 6 Claims



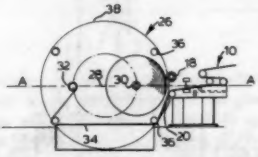
A double cam groove roll for imparting a traverse movement to a yarn guide has grooves that meet at their ends at substantially the same angle at which they cross elsewhere. The cam groove follower has a pivotal mounting and is of elongated form with rounded ends. The outer surfaces of the grooves where they run into each other are flared to provide a partial cup surface into which one end of the follower will seat and swing in that seat as a socket, while the opposite inner surfaces of the grooves are flared out to form a concave surface opposite said cup surface adapted to permit the other end of the follower to flop quickly over against the outer surface of the in-running groove. The cup or socket surface may be a spring loaded replaceable insert and the cam groove follower may have spring loaded end pieces seated in an intermediate pivotal body.

3,768,746

APPARATUS FOR JOINING CONTINUOUSLY MOVING WEB MATERIAL

Basil Scott Crone, 30 Stamford Rd., Bowdon, Cheshire, England

Filed June 4, 1971, Ser. No. 150,159
Claims priority, application Great Britain, June 5, 1970, 27175/70
Int. Cl. B65h *19/18*
U.S. Cl. 242—58.3 6 Claims



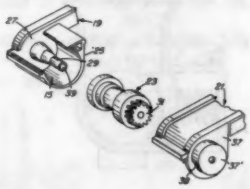
The invention provides an apparatus for joining or splicing a first continuously moving web to a second web. This comprises a displaceable roller and an accelerating roller, the functions of which are interchangeable, the accelerating roller serving to accelerate the second web to a speed commensurate with the speed of the first web. The displaceable roller may then be displaced to bring the first and second web into pressure contact to allow joining. In a preferred form both webs are supplied from reels carried on a reelstand and the second web may be joined to the first web unwinding in either sense without braking the continuity of flow, from a reel also unwinding in either sense.

3,768,747

CARTRIDGE TAKEUP CORE AND CORE-MOUNTING SYSTEM

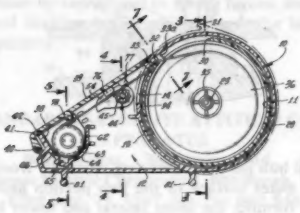
Evan A. Edwards, Pittsford; Robert C. Sutliff, and Archie J. Tucker, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 15, 1972, Ser. No. 234,794
Int. Cl. G03b *23/04*
U.S. Cl. 242—71.2 5 Claims



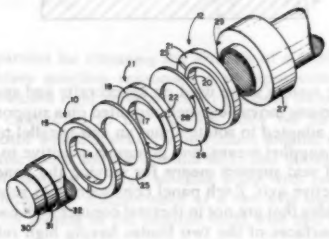
An improved gear-driven molded takeup core and mounting means therefor for use in a double-chambered film cartridge is disclosed. The instant invention is characterized by a takeup core design which allows the molding of a core having improved dimensional tolerances and, in addition, facilitates a core mounting arrangement which provides improved core support not only when the cartridge is disassembled during cartridge spooling operations, but also during use of the cartridge in a camera.

3,768,748
BULK FILM LOADER
Irving Pfefer, 6232 Atoll Ave., Van Nuys, Calif.
Filed Oct. 1, 1971, Ser. No. 185,676
Int. Cl. G03b *17/26*
U.S. Cl. 242—71.7 **8 Claims**



A bulk film loader for loading photographic film from a supply spool into a cassette for use in a camera, including a case divided into a bulk film compartment for retaining the supply spool and a cassette compartment for retaining a cassette, an access door for the cassette compartment, means for closing communication between the compartments when the door is open and opening such communication when the door is closed, and means for winding film from the spool into the cassette when the door is closed.

3,768,749
EXPANDABLE SHAFT APPARATUS
David L. Fredrickson, Brainerd, Minn.
Filed Oct. 20, 1971, Ser. No. 191,032
Int. Cl. B65h *75/24*
U.S. Cl. 242—72 **9 Claims**



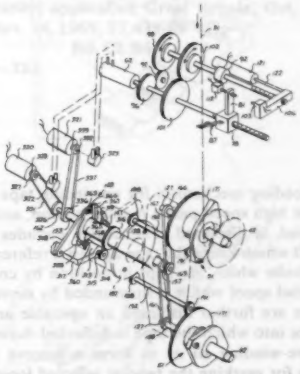
An expandable shaft for gripping an inside surface of the axial hole of a cylinder such as a spool or like object. Shaft diameter variation is achieved through use of several pairs of eccentric rings positioned as a core shaft. Each pair of rings consists of an inside eccentric ring attached to the core shaft and an outside eccentric ring mounted on the first ring with a freedom of motion for a relative rotational displacement with respect to the first ring which results in variation of the overall outside shaft diameter at a particular point on the circumference. By using a number of eccentric ring pairs and arranging them about the core shaft, the outside shaft diameter can be made to expand to the truc geometric center of the cylinder axial hole.

3,768,750
AUTOMATIC THREADING FILM REEL
Robert F. Menary, Northbrook, Ill., assignor to Paulman Incorporated, Northfield, Ill.
Filed Dec. 30, 1971, Ser. No. 214,153
Int. Cl. B65h *75/28*
U.S. Cl. 242—74.2 **2 Claims**

A reel for motion picture film which is characterized by a pair of circular side plates or flange members and a connecting hub structure for supporting the same on a spindle, with the plates having cut therein radially extending, circumferentially spaced spring fingers which are arranged in oppositely disposed, paired relation and which have free inner ends adapted to seat in radial recesses in the hub structure so that in the normal nonloaded condition a radial path is defined by each pair of fingers of decreasing width in the direction of

the hub structure whereby when the leading end of the film is fed between the fingers and the reel is rotated the edges of the film will be gripped and the film will be forced down between the resilient fingers until it is seated on the hub structure by subsequent lapping of the film, resulting in automatic threading.

3,768,751
METHODS OF AND APPARATUS FOR CONTINUOUSLY REELING STRAND MATERIAL
William Brownloe Brown, Pasedena, Md., assignor to Western Electric Company, Incorporated, New York, N.Y.
Division of Ser. No. 150,283, June 7, 1971, Pat. No. 3,701,491.
This application Aug. 14, 1972, Ser. No. 280,368
Int. Cl. B65h *57/28*
U.S. Cl. 242—158.2 **10 Claims**



A pair of transversely aligned arbors are rotatably cantilevered at opposite ends of a vertically disposed rotatable turret. Each arbor is provided with a plurality of internally floating, cam-operated mechanisms for locking a take-up reel thereon. Independent drive mechanisms drive the reels separately at varying speeds. A snagger device is cantedly mounted on the cantilevered end of each arbor for rotation therewith and extends a radial distance slightly greater than the adjacent flange of the reel thereon to oscillate between two points coplanar with respect to the inner and outer sur-

faces of the flange, respectively. A distributor adjacent to one of the reels actively taking up the strand is provided with a reversible drive screw for driving a traversable strand guide controlled alternately by a stationary limit switch adjacent to the reel flange associated with the snagger and a rectilinearly movable limit switch mounted on a second drive screw and normally positioned adjacent to the opposite reel flange. Prior to cutover from a full reel to an empty reel, when a footage counter indicates that a length of strand approximating one layer of convolutions thereof remains to be taken up: (a) the turret is rotated 180° to position an empty reel between the distributor and the nearly full reel; and (b) the second drive screw is actuated to move the movable limit switch toward the stationary limit switch at the traverse speed of the strand guide. The limit switches continue to control the reversal of the first drive screw. When the remaining length of strand is taken up and the advancing strand is traveling close to the inside flange of the empty reel, the snagger associated therewith is thrust into the path of the strand to grip and sever its connection to the full reel and to commence winding thereof upon the empty reel. The full reel is replaced by an empty reel to await the next cutover operation.

3,768,752

TAPE FEED AND CONTROL FOR CHARACTER RECOGNITION DEVICE

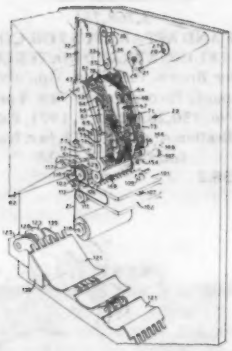
Giuseppe Bettini, Ivrea, and Dario Bisone, Montalto Dora, both of Italy, assignors to Ing. C. Olivetti & C. S.p.A., Ivrea (Torino), Italy

Filed Apr. 5, 1972, Ser. No. 241,186

Claims priority, application Italy, Apr. 5, 1971, 68134 A/71

Int. Cl. G11b *15/06, 15/58, 23/12*

U.S. Cl. 242—185 **8 Claims**



A tape feeding mechanism for unwinding tape from a roll, passing it at high speed past a reading station, and re-winding it on a spool, is disclosed. The device includes an inclined starting belt which keeps the tape against a reference wall, entrainment belts which are kept in position by control guides and a re-wind spool which is surrounded by movable guiding jaws. There are further disclosed an operable and closeable buffer space into which the tape is deflected during the initial stages of re-winding so as to form a reserve loop and a mechanism for marking the tape at selected locations during the run.

3,768,753

TAPE CARTRIDGE

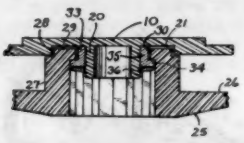
Kenneth A. Catto, Portland, and Harold R. Burt, Beaverton, both of Oreg., assignors to Data Time, Inc., Beaverton, Oreg.

Filed Mar. 31, 1972, Ser. No. 240,156

Int. Cl. G11b *23/10*

U.S. Cl. 242—197 **8 Claims**

A tape cartridge comprising an upper housing member, a flanged bearing, and a lower disc rotatably mounted on the bearing. The upper housing member has a central spindle and a concentric wall portion both extending downwardly from the lower surface, the wall portion and the surface encompassed, thereby forming the outer lateral and upper boundaries, respectively, of a tape chamber. The disc has an apertured central hub portion extending upwardly from the upper surface, the outer surface of the hub portion and the upper disc surface forming the inner lateral and lower boundaries, respectively, of the tape chamber. The bearing provides the sole, low friction surface contact with the disc.



3,768,754

LOUVER SYSTEM WITH SANDWICH TYPE BLADES

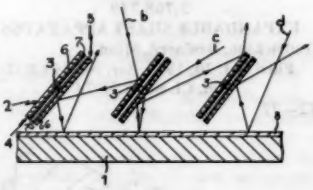
Manfred Janes, Voorschoten, Netherlands, assignor to Organisation Europeene de Recherches Spatiales, Paris, France

Filed Jan. 20, 1972, Ser. No. 219,232

Claims priority, application Belgium, Jan. 26, 1971, 98974

Int. Cl. B64g *1/10*

U.S. Cl. 244—1 SC **2 Claims**



A louver system to be used on spacecrafts and space vehicles, comprising movable panels mounted on a support means, each being adapted to rotate about an axis parallel to the surface of the support means, and actuators sensitive to the temperature of said support means for moving the panels about their respective axis. Each panel consists of two substantially parallel blades that are not in thermal contact with each other, the outer surfaces of the two blades having high reflectance and thermal emissivity factors and the two inner surfaces thereof which are facing each other having a low emissivity factor.

3,768,755

CARRIER PROJECTILES

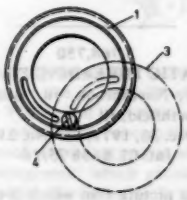
Jurgen Prochnow, Solingen, and Walter Simon, Laurensberg, both of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Germany

Filed Jan. 27, 1972, Ser. No. 221,281

Claims priority, application Germany, Feb. 3, 1971, P 21 04

Int. Cl. F42b *15/16, 13/32*

U.S. Cl. 244—3.24 **8 Claims**



In carrier projectiles adapted to carry payloads which are ejected from the rear after the projectile base has been explo-

sively blown away it is necessary to ensure that the blown-away base does not collide with the ejected payload. If elaborate braking devices are used they take up space which reduces the payload. The present invention provides a simple braking device which comes into action after the base is blown away and comprises a plate movably secured asymmetrically to the projectile base so as to be thrown out at right angles to the axis of base by centrifugal or spring forces, thus providing asymmetrical braking forces which divert the base from its original trajectory.

3,768,756

COMMANDABLE SATELLITE ATTITUDE CONTROL APPARATUS

Arthur G. Buckingham, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 21, 1967, Ser. No. 669,548

Int. Cl. B64g *1/00*

U.S. Cl. 244—1 SA **5 Claims**

An apparatus for changing the attitude of a satellite to obtain selective pointing responsively to input commands. A long thin-walled rigid vertical gravity gradient boom or rod is pivotally connected to the satellite body via an electrical torque motor which operates to introduce angular movement between the boom and the satellite body and thereby obtain a change in attitude of such satellite body with respect to a celestial reference. Employment of a two-axis torque motor provides for aiming of the satellite body with two degrees of freedom.

3,768,757

FLUID-BORNE VEHICLE

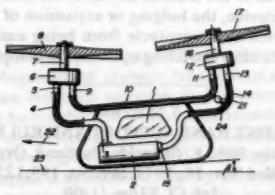
Karl Eickmann, Hayama-machi, Kanagawa-ken, Isshiki, Japan

Filed July 12, 1972, Ser. No. 272,913

Claims priority, application Austria, July 14, 1971, A 6145/71

Int. Cl. B64c *27/12*

U.S. Cl. 244—17.23 **10 Claims**



The vehicle has two or more positive-displacement fluid motors each having a rotating shaft. One of the motors is closer to the leading end and the other is closer to the trailing end of the vehicle, with the one closer to the leading end having a greater volumetric displacement capacity than the other one. A fluid-flow generator is provided for producing a flow of fluid, and conduits connecting the fluid motors and the generator in series so that fluid under pressure passes from the generator sequentially to the one fluid motor, to the other fluid motor and back to the generator.

3,768,758

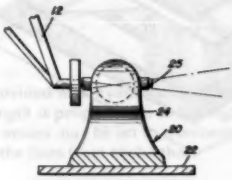
LANDING GEAR STRUT-TO-SKI BALL SOCKET CONNECTION

John Kubek, Anchorage, Alaska, assignor to Maxweldon Sides, Anchorage, Alaska, a part interest

Filed Jan. 28, 1972, Ser. No. 221,525

Int. Cl. B64c *25/52*

U.S. Cl. 244—108 **2 Claims**



An articulate connection for attaching a snow ski to the landing strut of an airplane and including structural features whereby the associated ski may not only oscillate about a horizontal transverse axis relative to the strut but also oscillate, in a limited manner, about an axis generally paralleling the ski.

3,768,759

MECHANISM FOR THE EMERGENCY OPENING OR JETTISONING OF THE HOODS OR CANOPIES OF VEHICLES

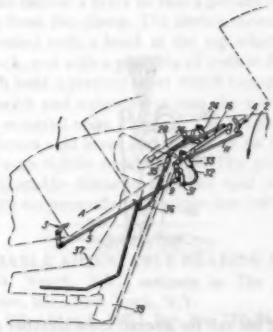
James Martin, Southlands Manor, Southlands Rd., Denham, Near Uxbridge, England

Filed Aug. 21, 1970, Ser. No. 65,805

Claims priority, application Great Britain, Oct. 13, 1969, 50,249/69; Nov. 24, 1969, 57,435/69

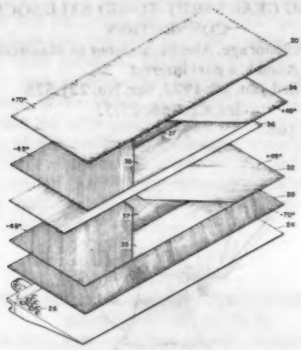
Int. Cl. B64c *1/14*

U.S. Cl. 244—121 **23 Claims**



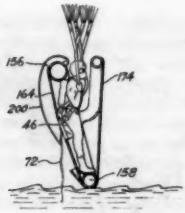
The invention concerns the emergency opening or jettisoning of a vehicle cockpit canopy, in particular an aircraft cockpit canopy, by the use of at least one rocket motor to thrust quickly the canopy away from its cockpit closing position.

3,768,760
GRAPHITE FIBER COMPOSITE COVERING EMPLOYING MULTI-DIRECTIONAL
Leo C. Jensen, Cumberland, Md., assignor to Hercules Incorporated, Wilmington, Del.
Filed Oct. 30, 1970, Ser. No. 85,626
Int. Cl. B64c 5/00
U.S. Cl. 244—123 3 Claims



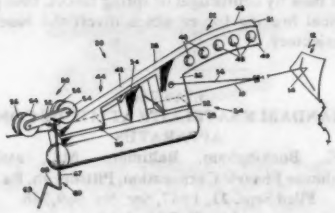
A covering for a structural component subjected to complicated and non-homogeneous loads in which high stiffness and light weight are necessary is provided. The covering is prepared from a graphite fiber composite in which the strength characteristics of the graphite fiber are efficiently utilized through multi-directional orientation of graphite fibers in the in-plane shear plies of the covering. The fibers in the inplane shear plies are oriented in at least two angles from a reference axis through the in-plane shear ply, whereby the number of fibers in this ply loaded lenghwise of the filaments is maximized.

3,768,761
INFLATABLE LIFE RAFT
Robert L. Cramer, Davenport, Iowa, assignor to The Bendix Corporation, South Bend, Ind.
Filed July 26, 1971, Ser. No. 165,990
Int. Cl. B64d 17/00
U.S. Cl. 244—138 R 2 Claims



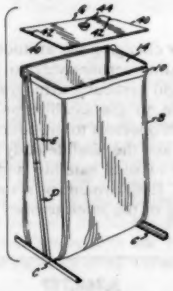
An inflatable life raft for aircraft crew member survival normally contained in a deflated state in a container attached to a parachute harness and provided with compartments adapted to be automatically inflated in a predetermined sequence by a pressurized gas during a parachute descent over land or water to enclose the parachutist and protect the same from adverse environmental conditions including water immersion upon touchdown.

3,768,762
AERIAL TOY
Robert J. George, 2186 Seminole Dr., Muskegon, Mich.
Filed Dec. 27, 1971, Ser. No. 212,334
Int. Cl. B64c 31/06
U.S. Cl. 244—155 R 13 Claims



A two-wheeled carrier is propelled up a kite string by a parachute mounted to a toy soldier. The toy is connected to the carrier by a wire shaped to permit free rotation of the toy relative to the carrier about both a vertical and horizontal axis when the carrier is mounted on the string. An ejector positionable arbitrarily along the string includes a ramp which separates the carrier both above and laterally to the windward side of the string prior to separation off the free end of the ramp.

3,768,763
SUPPORTING DEVICE FOR OPEN TOPPED RECEPTACLE
Ray Hembree, 5922 Olive, Long Beach, Calif.
Filed Mar. 11, 1971, Ser. No. 123,138
Int. Cl. B65b 67/12
U.S. Cl. 248—97 1 Claim

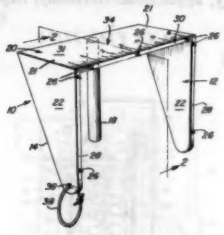


A device that may be assembled without the use of hand tools into a support to removably maintain an open topped receptacle in a fillable position. The receptacle is of the type that is formed from a pliable sheet material, and is supported from the device in a vertical dependent position. The receptacle due to the physical nature of the sheet material defining the same, tends to have the sidewalls bulge outwardly when filled with material such as trash, grass cuttings, laundry and the like, but due to the manner in which the receptacle is supported in the device, the bulging or expansion of the sidewalls does not prevent the receptacle from being easily separated from the device after the filling operation is completed.

3,768,764
ARTIST HAND SUPPORT AND RULER
Ruth Horenstein, 5403 E. Burnside, Portland, Oreg.
Filed Nov. 16, 1971, Ser. No. 199,122
Int. Cl. F16m 11/00
U.S. Cl. 248—118 5 Claims

A hand support particularly for use by artists and the like having a frame with a wall portion provided with longitu-

dinally spaced end portions, and a handle connected to the wall portion and extending longitudinally away therefrom. Side wall portions are connected to the end portions and extend away from the wall portion codirectional with the handle. Each side wall portion has an edge surface contoured so as to



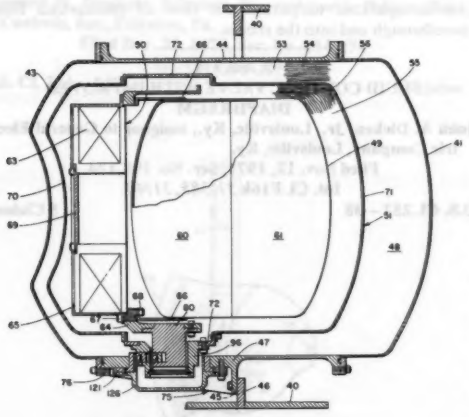
approach a surface which the frame contacts in the direction away from the wall portion. The frame has a plurality of protrusions arranged for providing point contact with the surface which it contacts. Indentations may be provided in the wall portion for defining a scale.

3,768,765

THERMALLY ISOLATING STRUCTURAL SUPPORT SYSTEM AND CRYOGENIC ASSEMBLY EMBODYING THE SAME

Robert Warren Breckenridge, Jr., Harvard, Mass., assignor to Arthur D. Little Inc., Cambridge, Mass.

Filed Feb. 14, 1972, Ser. No. 225,914
Int. Cl. F22b *37/24*
U.S. Cl. 248—146 9 Claims



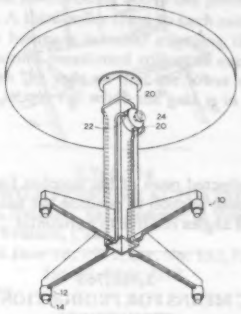
A thermally isolating structural support system to support a cryogenic refrigerator or cryogen tank and/or a refrigeration load within an insulated assembly in a manner to minimize heat transfer by conduction from the surroundings. The support system comprises a rigid support member, supporting pins affixed to the rigid member, and a bushing for each pin in which ball supports maintain a spacing between the pin and bushing and permit the pin to move freely parallel to its axis, but constrains its movement perpendicular to its axis. The support system may be used to support several loads within the same assembly.

3,768,766

TABLE LEVELLING DEVICE

Alexander O. Bain, Hamilton, Ontario, Canada

Filed Oct. 21, 1970, Ser. No. 82,691
Int. Cl. F16m *11/24*
U.S. Cl. 248—188.2 2 Claims



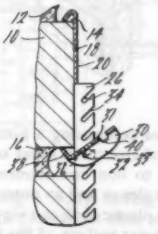
Articles are provided with hydraulic lines to supports where the supported length is proportional to the hydraulic liquid in the line. Control means may be set to interconnect all the lines or to disconnect the lines from each other.

3,768,767

ADJUSTABLE HANGER FOR BRICK WALL

Raymond Dobkowski, 19162 Hubell, Detroit, Mich.

Filed July 21, 1971, Ser. No. 164,594
Int. Cl. F16m *13/02*
U.S. Cl. 248—226 C 1 Claim



A device having two cooperating members that may be clamped to the face of a brick so that a picture or other object may be hung from the clamp. The device includes an upright member provided with a hook at the top which engages the top of the brick, and with a plurality of slots in the body of the upright which hold a pivoted lever which engages the bottom face of the brick and extends out into the room providing a hook for the material to be hung on. The weight of the object being hung forces said lever and said hook on the top of said upright to clamp tightly on the brick. The plurality of slots providing adjustable distance between said lever and said upper hook for accommodating various size bricks.

3,768,768

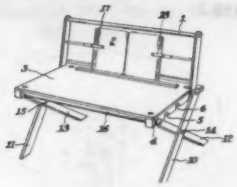
FOLDABLE ADJUSTABLE READING STAND

Vera Benlian, Nyack, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed May 5, 1972, Ser. No. 250,564
Int. Cl. A47g *1/24*
U.S. Cl. 248—456 3 Claims

A base portion is pivotally affixed to a back portion for supporting reading material. The base portion has spaced notches formed in its underside. Each of a first pair of legs is pivotally affixed to a corresponding side of the base portion. Each of a second pair of legs is pivotally affixed in its center area to a

corresponding one of the first pair of legs. A rod is affixed at each end to a corresponding one of the second pair of legs at the upper ends of the legs in a manner whereby the rod may be



positioned in selected ones of the notches formed in the underside of the base portion to position the base and back portions at selected angles relative to horizontal.

3,768,769

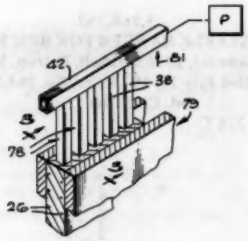
PNEUMATIC MEANS FOR PRODUCTION OF MOLDED STRUCTURES

Carrol C. Sachs, 9938 Clybourn Ave., Sunland, Calif.

Filed Mar. 29, 1971, Ser. No. 129,039

Int. Cl. B28b 7/30

U.S. Cl. 249—65 **11 Claims**



Pneumatic means comprising a hollow mandrel or hollow tube having secured around its outer surface along the length thereof according to one embodiment, a flexible open-cell polyurethane foam sleeve and an outer skin formed of a flexible non-permeable plastic such as a vinyl plastic skin adhesively secured to the outer surface of the flexible open-cell foam sleeve, and air passages for communication between the interior of the mandrel and the open-cell foam sleeve, the resulting assembly being positioned in a mold for production of cored structural panels. In operation the tool assembly is placed under pressure and expanded to force the plastic skin of the assembly outwardly during pouring and setting of the construction material, e.g., a cement or cement-polymer composition in a mold, and after setting thereof the tool assembly is subjected to reduced pressure or a vacuum to withdraw the plastic skin from the set composition, e.g., in the form of a molded panel, to facilitate removal of the tool from the molded panel, thereby forming a cored construction material or panel. Also included as a feature, pneumatic means in the form of a bellows arrangement comprising an external flexible, e.g., rubber, corrugated member, and in the interior of such corrugated member a permeable open-cell, e.g., polyurethane, foam, and tensioning means, said bellows being inflatable for applying pressure to force a contact, e.g., honeycomb, member mounted on the bellows, against an outer surface of a casting composition in a mold, to form an outer surface for a structural molded panel, and which bellows can be deflated to facilitate removal of the pneumatic tool and associated members from the mold following setting of the panel construction. Also included, means providing a combination or arrangement of a plurality of both said mandrel and bellows assemblies for provision of a cored molded structural panel containing outer surfaces of a predetermined, e.g., smooth or textured, configuration.

3,768,770

VALVE

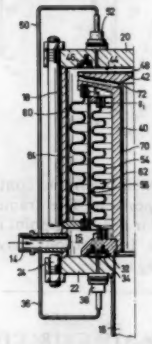
Lutz Tilo Kayser, D-7 Stuttgart, 1 am bismarckturn 10 Germany

Filed Aug. 29, 1972, Ser. No. 284,837

Claims priority, application Germany, Sept. 1, 1971, P 21 43 655.3

Int. Cl. F16k 31/14

U.S. Cl. 251—25 **8 Claims**



A valve has a housing provided with an inlet for pressurized fluid, a valve seat having a seating surface, and a valve member exposed to the incoming pressurized fluid and having a cooperating surface juxtaposed and normally in engagement with the seating surface. At least one of these surfaces is provided with a shallow recess in which a conduit terminates which communicates with the inlet so as to admit into the recess sufficient pressurized fluid to lift the valve member off the valve seat. A control valve is interposed in the conduit and can be operated to permit the flow of pressurized fluid therethrough and into the recess.

3,768,771

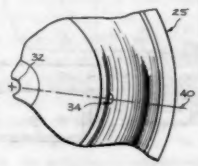
FLUID CONTROL VALVE WITH IMPROVED DIAPHRAGM

John A. Dicken, Jr., Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 12, 1971, Ser. No. 198,174

Int. Cl. F16k 31/385, 31/40

U.S. Cl. 251—38 **5 Claims**



A fluid control valve, of the type utilizing pressure differential across a diaphragm as the controlling parameter, is provided with a flexible diaphragm which is mounted so as to be substantially limited to flexing in a single direction. Consequent distension of the diaphragm is likewise substantially limited to a single direction. A bleed hole in the diaphragm is provided for passing pressurized fluid between the surfaces of the diaphragm for the creation of a pressure differential thereacross. The bleed hole is elongated and preferably oblong in perimeter and is oriented with its minor axis in substantial alignment with the direction of distension so that as

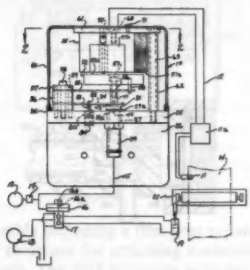
the diaphragm material is stretched, the shape of the bleed hole becomes more nearly circular.

3,768,772

ELECTRO-PNEUMATIC TRANSDUCER

George Vischulis, Menomonee Falls, Wis., assignor to Rockford Servo Corporation, Rockford, Ill.

Filed Oct. 4, 1971, Ser. No. 186,276
Int. Cl. F16k *31/06*
U.S. Cl. 251—129 5 Claims



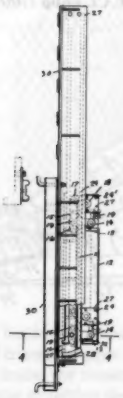
An electro-pneumatic transducer in which a valve member and an armature of an electro-magnetic actuator are mounted on the outboard end of a cantilever spring assembly for movement as a unit relative to a pneumatic orifice to modulate a pneumatic signal in proportion to an electrical signal applied to the stator of the electromagnetic actuator.

3,768,773

SLUICE GATE

Leonard W. Stephens, Fairview, Pa., assignor to Palmer Fluid Controls, Inc., Fairview, Pa.

Filed Dec. 30, 1971, Ser. No. 214,074
Int. Cl. F16k *3/04*
U.S. Cl. 251—147 9 Claims



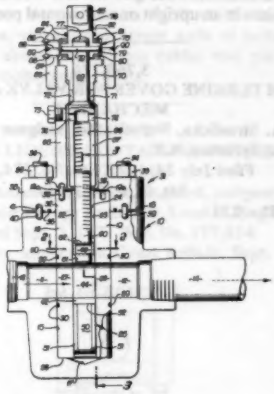
A closure for fluid conduits made up generally of an orifice frame defining an opening, an angle frame fixed to each side of the opening and extending from it. Each angle frame having a flange extending in the direction of the fluid stream and a pair of guide rails fixed to each flange on the side adjacent each other, the guide rails extending vertically in spaced relation to each other. The gate has an upper crank and a lower crank pivoted to each side. The cranks each have two spaced rollers, one of the rollers being above the pivot and the other below the pivot. A third roller fixed to each said crank and an operating frame having a member engaging the third roller. The first and second mentioned rollers of each crank being disposed between the rails so that the lower roller is swung into an opening in one rail when the gate is in the lowermost position.

3,768,774

GATE VALVE WITH PRESSURE ACTUATED PLUG SEAT

Benton F. Baugh, Houston, Tex., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed June 16, 1971, Ser. No. 153,733
Int. Cl. F16k *3/18*
U.S. Cl. 251—175 12 Claims



A gate valve including a body having inlet and outlet passages intersected by a cylindrical bore receiving a pair of spaced, opposed seal plates having passages aligned with the other passages, the exterior of the seal plates being cylindrical, conforming to the wall of the cylindrical bore and sealing thereagainst, the inner surfaces of the seal plates being flat and parallel to each other. A gate or carrier located between and slidable along the flat faces has a passage alignable with all of the other passages to produce full opening of the valve, the gate carrying a cylindrical plug seat in a companion cylindrical gate cavity which is slidable with the gate along the flat surfaces across the seal plate passages to close the gate valve, the upstream pressure shifting the plug seat in the gate against the flat surface of the downstream seal plate to provide a metal-to-metal seal thereagainst, supplemented by a seal ring on the plug seat sealing against the gate and the downstream seal plate.

3,768,775

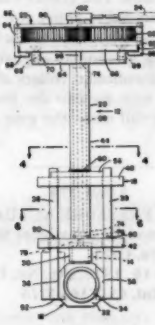
PORTABLE VALVE ACTUATOR

Monte B. Archer, Vacaville, Calif., assignor to Clarence Ver Vaecke, Vacaville, Calif., a part interest

Filed Feb. 24, 1972, Ser. No. 229,059
Int. Cl. F16k *37/00*
U.S. Cl. 251—230 20 Claims

A portable valve actuator for turning hard to operate valve stems such as found on valves buried in the ground. The operator has a yoke that is placed over the valve and engages

sides of the valve body. A demountable power drive unit is mounted to the yoke and actuates a socket releasably engaged

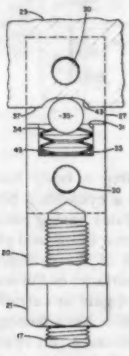


with the valve stem. The operator can be used with valves of different sizes in an upright or a horizontal position.

3,768,776
STEAM TURBINE GOVERNOR VALVE ACTUATING MECHANISM

William A. Straslicka, Norvelt, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed July 24, 1972, Ser. No. 274,159
Int. Cl. F16k *31/44*
U.S. Cl. 251—231 5 Claims



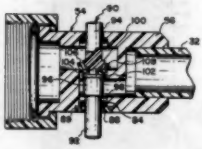
The connecting links of the pinned pivotal joints in the turbine governor valve operating mechanism are maintained under tension by a stack of Belleville spring washers mounted in one motion transmitting member. The spring washers urge a ball against the other motion transmitting member establishing a preloaded joint between the valves and the valve actuating member. This arrangement eliminates play in the pinned joint resulting in a more stable governing system.

3,768,777
LIQUID SPRAY DEVICE

Valentine Hechler, IV, 26 Meadow View Rd., Northfield, Ill.

Filed Apr. 26, 1971, Ser. No. 137,541
Int. Cl. F16k *1/36*
U.S. Cl. 251—319 3 Claims

The disclosure describes a reciprocating manual slide valve with coaxial port and dispensing orifice, in which the outlet pressure of the valve and thereby the pressure differential across the port with the valve in the open position is controlled by the discharge orifice having a flow area sufficiently less than the effective flow area of the valve port that their ratio is greater than 2 to 1 whereby the downstream pressure at the valve port is only slightly less than the upstream pressure for high volume potential flow to the upstream side of the spray nozzle orifice at a substantially constant pressure for constancy of spray application. In one embodiment the valve stem has opposing effective areas externally balanced to atmosphere, and has equal areas on opposite sides of the valve that are appreciably greater in area than the balanced areas when the valve is closed, to hold the valve alternatively in its open and

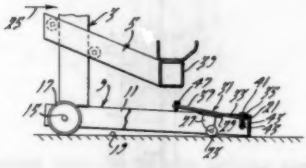


closed positions by the pressure of the liquid it controls. The valve stem areas are alternately increased when the valve is moved in alternate directions and by this pressure is urged with a snap action from intermediate positions to its closed position for safety. In another embodiment, the valve elements are externally unbalanced so that the valve must be held open and there is a small pressure, about 4 oz. tending to close the valve due to the flow of liquid thereby. A third embodiment allows the selective use of two nozzles in conjunction with the invention.

3,768,778
LIFT CARRIAGE

Lyle L. Arnes, Racine, Wis., assignor to Tenneco Inc., Racine, Wis.

Filed June 11, 1971, Ser. No. 152,219
Int. Cl. B60p *1/00*
U.S. Cl. 254—2 B 6 Claims



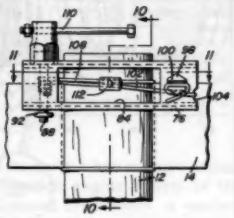
A lifting jack has a base that is provided with rear wheels and a front caster plate which is movable between operative and inoperative positions and arranged so that it may be held in the operative position by the lift carriage of the jack.

3,768,779

TOOL FOR TENSIONING ELONGATED TENSION MEMBERS

George W. Garretson, Rt. 3, Box 260, Ocala, Fla.

Division of Ser. No. 45,176, June 10, 1970, Pat. No. 3,683,739.
This application Aug. 15, 1972, Ser. No. 280,892
Int. Cl. B25b *25/00*
U.S. Cl. 254—51 4 Claims



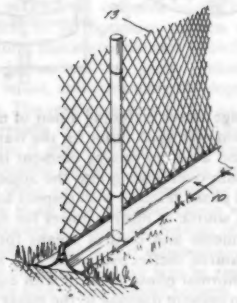
A repair assembly including a first post repair structure and a second repair structure for attaching horizontal fence members to fence posts. The first structure includes an upstanding split clamp sleeve with downwardly divergent bracing legs for clamping about the rotted lower end of a fence post and embedding in ground anchored concrete and the second structure includes an endless, formed and tensioned wire loop arranged to twice horizontally embrace the side of a corresponding fence post remote from the related fence boards and twice vertically embrace the fence board side remote from the corresponding fence post.

3,768,780

FENCE BORDER

Tommie Cowles, 1075 Welsh View Dr., Newark, and Clarence McKittrick, 5424 Winchester Southern Rd., Canal Winchester, both of Ohio

Filed Jan. 26, 1972, Ser. No. 220,732
Int. Cl. E04h *17/06*
U.S. Cl. 256—1 1 Claim



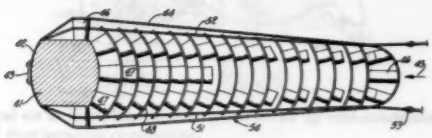
A construction for bordering a lower edge of a fence, so to eliminate the need of trimming grass under a fence or passage of animals under the fence, the construction comprising a one piece continuous plastic or rubber device that fits between the bottom edge of the fence and the grass or ground, the device consisting of a pair of side by side panels interconnected by a spreadable accordeon pleat element so that the panels can be spread apart, and so that the lower edge of the fence can be force fitted between the upper portions of the panels, thus securing the border in utility position.

3,768,781

SHOCK ABSORBING STRUCTURE

Grant W. Walker; Duane B. Ford; Lester N. Meinzer, all of Sacramento, and Reid S. Larsen, Fair Oaks, all of Calif., assignors to Dynamics Research and Manufacturing, Inc., Sacramento, Calif.

Division of Ser. No. 69,872, Sept. 4, 1970, Pat. No. 3,695,583.
This application Mar. 30, 1972, Ser. No. 239,809
Int. Cl. E01f *15/00*
U.S. Cl. 256—1 3 Claims



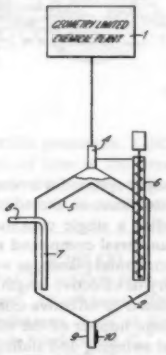
For use with an upright abutment, a belt at its ends is mounted on the abutment and has its intermediate portion disposed with the belt web vertical and cantilevered out from and spaced away from the abutment. Frangible energy absorbers are disposed between the belt and the abutment and are supported thereon. Vertical cleats reinforce the belt web. In large installations, vertical diaphragm walls of belts are used adjacent energy absorbers. Anchor cables may pass through and engage the diaphragms or belts.

3,768,782

TANKS FOR LIQUIDS CONTAINING FISSIONABLE MATERIAL

David Watson Clelland, Appleton, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Sept. 3, 1971, Ser. No. 177,614
Claims priority, application Great Britain, Sept. 23, 1970, 45,415/70
Int. Cl. B01f *5/12*
U.S. Cl. 259—4 2 Claims



A high capacity tank for handling liquids containing fissionable material and having recirculating and mixing means which prevent the creation of critical masses.

3,768,783

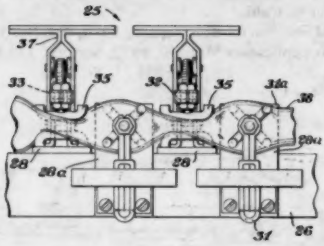
INTERFACIAL SURFACE GENERATOR FORMING APPARATUS

Douglas S. Chisholm, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 4, 1971, Ser. No. 195,642
Int. Cl. B01f *5/00*; F16l *55/14*
U.S. Cl. 259—4 5 Claims

An interfacial surface generator is formed by clamping a

flexible tube between a plurality of pairs of angularly disposed



elongate elements wherein adjacent pairs of elements are axially displaced about 90° and are of opposite hand.

3,768,784

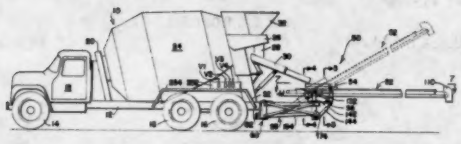
DISTRIBUTING CONVEYOR SYSTEM FOR A ROTARY CONCRETE MIXING OR OTHER TRUCK

Francis T. Spellman, Jr., Blue Springs, Mo., assignor to Symons Corporation, Des Plaines, Ill.

Filed Dec. 16, 1971, Ser. No. 208,682

Int. Cl. B28c 7/16

U.S. Cl. 259—169 **24 Claims**



A distributing conveyor system for a rotary concrete mixing truck adapted for installation on the truck frame and, when thus installed, embodies a single continuous conveyor unit which is capable of universal compound swinging movement in both vertical and horizontal planes, as well as being longitudinally shiftable to vary its effective length. The conveyor unit is at all times maintained in effective concrete-receiving register with the discharge hopper of the mixing truck and, by reason of its universal swinging and sliding movement, either uphill or downhill concrete distribution is made possible. By reason of its longitudinal shifting movement, either proximate or remote concrete placement may be effected.

3,768,785

PORTABLE AND DISMANTLEABLE CONCRETE MIXER

Rolf Susemihl, Altes Sonnenbad, 638 Bad Homburg, Germany

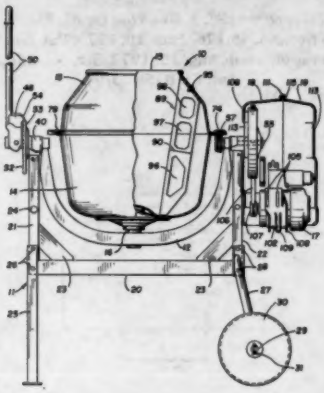
Filed Dec. 2, 1971, Ser. No. 204,037

Claims priority, application Germany, Dec. 4, 1970, P 20 59 686.5; Dec. 4, 1970, P 20 59 698.9; Dec. 4, 1970, P 20 59 699.0; Dec. 4, 1970, P 20 59 700.1; Dec. 4, 1970, P 20 59 701.7

Int. Cl. B28c 5/18

U.S. Cl. 259—177 R **16 Claims**

Dismantleable mixer for concrete and the like. The mixer has a drum of two nestable sections. For storage and shipment



all parts other than the frame fit within the nested drums.

3,768,786

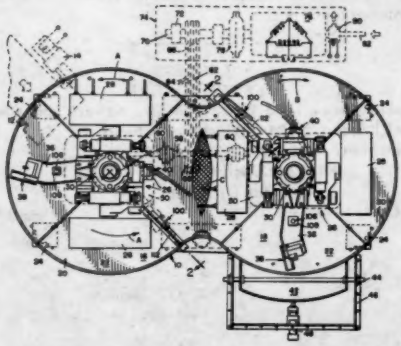
MULTI-MULL PHASE CONTROL SYSTEM

Elbert C. Troy, Highland Park, Ill., assignor to National Engineering Company, Chicago, Ill.

Filed June 26, 1972, Ser. No. 266,430

Int. Cl. B28c 5/10

U.S. Cl. 259—179 **10 Claims**



A multiple stage mixer including a pair of mixing chambers in communication with each other for the transfer of material therebetween and a rotary mixing element in each chamber movable on a path overlapping into the adjacent chamber in selected normal phase relation with respect to the mixing element therein. A source of motive power for rotatively driving said mixing elements and control means for rendering said motive power source ineffective when said mixing elements are out of said normal phase relation with each other is provided in order to prevent damage to the mixer in the event the phase relation between the mixing elements becomes abnormal.

3,768,787

HIGH VELOCITY CARBURETOR

Frederick J. Marsee, Clawson, Mich., assignor to Ethyl Corporation, Richmond, Va.

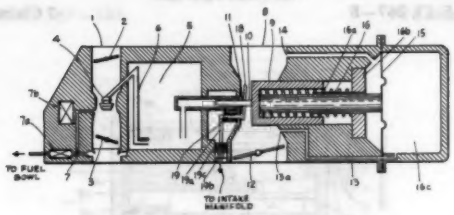
Filed June 28, 1971, Ser. No. 157,087

Int. Cl. F02m 9/06

U.S. Cl. 261—23 A **9 Claims**

A multibarrel, high velocity carburetor comprising at least one primary barrel having a conventional secondary construc-

tion and at least one venturi barrel which has a cross-sectional area greater than that of the primary barrel and which has means for varying this cross sectional area in response to engine demand; and its use in a low exhaust emission, spark ignition internal combustion engine system of the lean reactor type, to effect improved driveability. A preferred carburetor has one primary barrel and two variable secondary barrels.



3,768,788

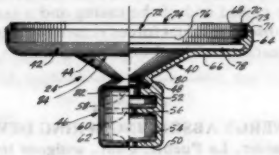
LIQUID AERATION METHOD AND APPARATUS

Sebastien M. Candel, 790 Earlhom, Pasadena, Calif.

Filed Apr. 21, 1971, Ser. No. 136,102

Int. Cl. B01f *3/04*

U.S. Cl. 261—122 **13 Claims**



A method for aerating a liquid such as sewage in a treatment tank, includes arranging a plurality of discrete diffusing surfaces in an optimum pattern about the tank and transmitting an identical quantity of air through each diffusing surface so that a plurality of discrete columns of air bubbles ascend through the liquid in an optimum pattern to the surface thereof. This pattern maximizes the rate of air/liquid interface production by increasing the mean velocity difference between air and liquid, and enhancing the degree of localized microturbulence. The residence time of the air bubbles is also increased. This results in a higher oxygenation efficiency. A diffusing apparatus is also disclosed for facilitating the above process. The apparatus includes a diffusing material having a substantially flat outer surface, and means for connecting the diffusing material in air flow communication with an air conduit disposed adjacent or under the bottom of the tank, such that the outer diffusing surface is substantially horizontal. A plurality of these diffusing apparati may be easily and quickly arranged about the tank in any desired pattern.

3,768,789

ACCESSORY FOR CARBURETORS FOR ENGINES

Paul August, Capellades 1, Barcelona, 6 Spain

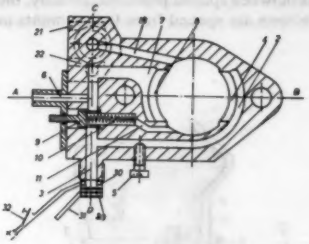
Continuation-in-part of Ser. No. 618,028, Feb. 23, 1967, abandoned. This application Apr. 2, 1970, Ser. No. 25,279

Claims priority, application Germany, Jan. 9, 1967, A 54 567

Int. Cl. F02m *23/08*

U.S. Cl. 261—142 **8 Claims**

A carburetor structure provides additional air during engine idling at the idling fuel inlet, and additional air during engine acceleration away from the idling fuel inlet. Provision of additional air at these locations helps to break up fuel condensate, and thus improve combustion.



3,768,790

APPARATUS FOR THE MANUFACTURE OF POTASSIUM

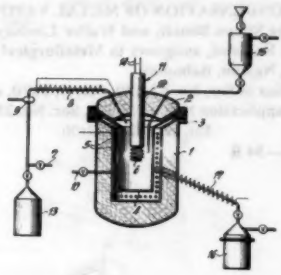
Uwe Landt, Hurth, near Cologne; Helmut Seifert, Hermulheim, near Cologne, and Otto Bretschneider, Kirchzarten, Schwarzwald, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, Germany

Division of Ser. No. 41,016, May 27, 1970, Pat. No. 3,700,430. This application Aug. 16, 1972, Ser. No. 280,982

Claims priority, application Germany, June 25, 1969, P 19 32 129.0

Int. Cl. F27b *14/04*, *14/06*

U.S. Cl. 266—15 **9 Claims**



Production of metallic potassium. K_2SO_4 placed in a reactor is reduced by means of iron in the presence of CaO under reduced pressure and with supply of heat, and the resulting potassium, which distils over, is condensed.

3,768,791

ADJUSTABLE IMPACT CASING FOR A SHAFT FURNACE

Gunter Schwerdtfeger, Oberhausen Rhineland, and Bruno Kammerling, Oberhausen, both of Germany, assignors to Gutehoffnungshuette Sterkrade A.G.

Filed June 22, 1972, Ser. No. 265,234

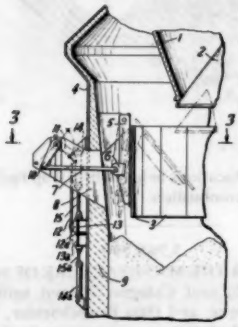
Claims priority, application Germany, June 16, 1971, P 21 29 741.6

Int. Cl. F27b *1/12*

U.S. Cl. 266—31 **7 Claims**

An adjustable impact casing for use in a shaft furnace is formed of a plurality of upwardly extending segments. The segments are arranged in an inner circular row enclosed by an outer circular row. In each row, segments are spaced angularly apart and are offset to the segments in the other row with their upwardly extending lateral edges arranged in overlapping and substantially contacting relationship. The segments are pivotally supported about axes extending transversely of the upright axis of the casing and as segments in the inner row are secured to one adjustment drive arrangement while the segments in the outer row are secured to another adjustment

drive arrangement. A control circuit is connected to the adjustment drive arrangements for regulating the movement of the segments between spaced positions. Initially, the segments in one of the rows are spaced from the segments in the other



row. Then, the two rows are moved together toward a new position with one row of segments moved into the new position. Finally, the other row of segments is displaced into contact with the row of segments already in position.

3,768,792

CONDENSATION OF METAL VAPOUR

Frank George Simon Benatt, and Walter Lindsay Linton, both of Bristol, England, assignors to Metallurgical Development Company, Nassau, Bahamas

Continuation of Ser. No. 52,529, July 6, 1970, abandoned. This application May 12, 1972, Ser. No. 252,941

Int. Cl. C22b *13/06*

U.S. Cl. 266—34 R **7 Claims**

An impeller suitable to throw up a spray of molten lead in a lead-splash condenser has at least one longer arm and at least one shorter arm, and preferably four arms arranged long-short-long-short, to improve condenser efficiency.

ERRATUM

For Class 267—1 see:
Patent No. 3,768,818

3,768,793

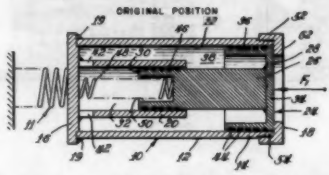
HYDRAULIC BUFFER DEVICE

Flournoy W. Hampton, 3234 Orchard Manor Cir., Louisville, Ky.

Filed Apr. 27, 1972, Ser. No. 248,214

Int. Cl. B60g *11/52*

U.S. Cl. 267—8 **7 Claims**



A damped spring unit housed in a cylindrical casing having one closed end and having a centrally located inner cylindrical wall supported from this closed end. A force transfer member is slidably supported in the cylindrical casing and includes an inner piston portion slidably supported in the inner cylindrical wall. A second piston portion is slidably supported at the outer end of the cylinder casing. A plurality of ports are formed at the inner end of the cylindrical wall to place the inner chamber in communication with the outer chamber. The outer chamber is filled with a mixture of a compressible fluid and non-compressible fluid and the inner chamber is filled with a non-compressible fluid. An external spring is connected between the closed end of the casing and a stationary frame member to absorb residual forces remaining after the damped spring unit reaches its "hard stop" condition.

3,768,794

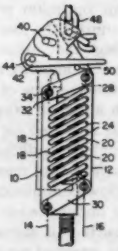
ENERGY ABSORBING SPRING DEVICE

Philip O. Garner, La Puente, Calif., assignor to Litton Industries, Inc., Beverly Hills, Calif.

Filed Feb. 2, 1972, Ser. No. 222,936

Int. Cl. F16f *1/08, 1/12, 13/00*

U.S. Cl. 267—74 **17 Claims**



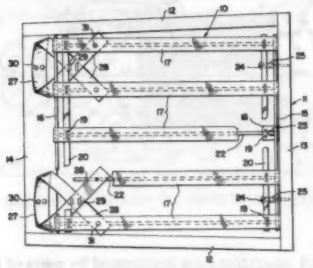
A spring device with a pair of elongated members where each member holds the coils of the spring in a predetermined spaced relationship by connecting to the coils at substantially opposite points in each coil. The connection of the elongated members to each coil of the spring divides each coil into a pair of separately acting spring segments. Parallel relative motion of the elongated members in response to opposing forces applied to them results in the bending of each spring segment from a first shape in a rest position to a second shape. As the amount of force applied to the members increases in a linear fashion the amount of parallel relative motion for a unit amount of force decreases; thus, providing a non-linear energy absorbing device.

3,768,795

LOOP SPRING SEAT SUSPENSION

Alan E. Rathbun, Jr., 3135 Highland Dr., Cuyahoga Falls, Ohio

Filed Oct. 30, 1972, Ser. No. 302,116
Int. Cl. F16f 3/00
U.S. Cl. 267—103 10 Claims



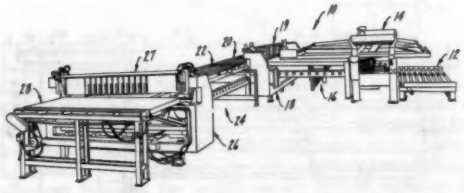
A spring seat suspension having a spring frame supported on a base, at least one end of said frame supported on a loop of flat spring metal having the bottom of the loop secured to said base. The upper ends of the loop are twisted laterally and secured together to form the loop into a collar and tie shape and the ends are secured to the frame at a location spaced laterally of the bottom connection with the base.

3,768,796

METHOD AND APPARATUS FOR CUTTING PANELS

James W. Campbell, Fort Worth, Tex., assignor to Halton City State Bank, Fort Worth, Tex.

Division of Ser. No. 805,943, Feb. 17, 1969, Pat. No. 3,662,798. This application Sept. 10, 1970, Ser. No. 71,107
Int. Cl. B23g 3/08
U.S. Cl. 269—34 6 Claims



This is concerned with a panel-cutting machine and is specifically concerned with apparatus for securely holding a stack of sheet material with respect to a cutting station while a cutter traverses along its cutting path through the material. The material is indexed for gauging along an axis and a pair of hold-downs are used in which each is mounted at the cutting station traversely of the axis on either side of the cutting path for movement to and from the stack on the stack side opposite the cutter.

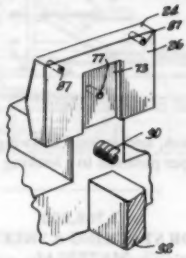
3,768,797

VISE ASSEMBLY

Raymond H. Kartasuk, Lincolnwood, and Walter Smierciak, Elgin, both of Ill., assignors to Wilton Corporation, Schiller Park, Ill.

Continuation-in-part of Ser. No. 73,860, Sept. 21, 1970, Pat. No. 3,675,916. This application Apr. 21, 1971, Ser. No. 135,938
Int. Cl. B25b 1/24, 5/16
U.S. Cl. 269—283 3 Claims

A vise has opposed jaw faces with smooth work-engaging surfaces for use in gripping wood or like objects without marring the same. The vise may be converted to one for holding pipes or other workpieces requiring serrated work-gripping faces. For this purpose inserts are provided that have pins which fit into holes that are in the jaws and which open at the jaw faces, whereby the inserts may be assembled and disassembled with the jaws without the need for tools of any kind. The arrangement is such that where different sets of inserts are provided, only one insert may be mounted at a time on a jaw.

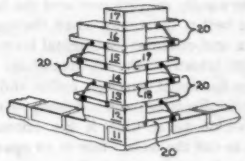


3,768,798

ADJUSTABLE TOOTHING DEVICE

Walter C. Dankert, 3336 Goddard Rd., Toledo, Ohio

Filed Sept. 1, 1971, Ser. No. 176,853
Int. Cl. B23g 3/18
U.S. Cl. 269—289 8 Claims



A manually adjustable toothing device especially suited for a brick mason's use in spacing and supporting freshly mortared brick or block-type masonry members in aligned position during the laying up of a corner wall structure. The toothing device comprises a pair of spacing plates or blocks which are arranged to accommodate variably adjustable spacing movements towards and away from each other by means pivotally interconnecting the spacing plates and providing each with a pivotal axis about which to pivot relative to the other spacing plate, and by manually adjustable biasing means for retaining the spacing plates in selected spaced positions relative to one another.

3,768,799

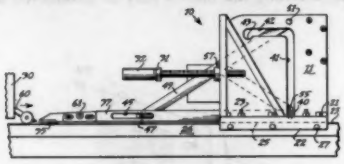
CATCHER MECHANISM FOR CLOTH SPREADING MACHINE

Thomas W. Martin, Sr., and Thomas W. Martin, Jr., both of Nashville, Tenn., assignors to Cutters Machine Company, Inc., Nashville, Tenn.

Filed Aug. 7, 1970, Ser. No. 61,939
Int. Cl. B65h 29/46
U.S. Cl. 270—30 5 Claims

A catcher mechanism having a catcher bar disposed transversely for cooperation with a cloth spreading machine, including a frame having guide means and link means cooperat-

ing with the guide means and connected to the catcher bar, first to elevate the catcher bar in a vertical plane from a lower



to an upper position, and second to swing the catcher bar upward from the upper position to a locking position.

3,768,800

APPARATUS FOR STACKING A SHEET-LIKE FLEXIBLE MATERIAL

Heinrich Gutknecht, Broodakker, Netherlands, assignor to N. V. Veluwse Machine Industrie

Filed Jan. 13, 1972, Ser. No. 217,487
Int. Cl. B65h *29/46*
U.S. Cl. 270—30 **3 Claims**

This invention relates to an apparatus for stacking a continuous web of material in a continuous zigzag condition or as sheets cut by the apparatus, said apparatus comprising an endless conveyor belt guided around rollers and mounted in a carriage which can be reciprocated horizontally between two end positions, the rollers being mounted in the frame of the apparatus in such a way that a belt loop which is located between the forwardly moving part and the backwardly moving part of the belt is shortened when the carriage makes its outward stroke and resumes its original length when the carriage makes its return stroke. A freewheel coupling allows rotation of the foremost carriage roller and the rear frame roller only in one direction, and a driving system reciprocates the carriage which takes with it the conveyor belt and a cutting means to cut the web, when in an operative condition, at the end of each return stroke of the carriage so that when the cutting means is operative web pieces of equal length are cut off and stacked and when the cutting means is not operative the web is zigzag folded and stacked. A clamp engages the conveyor belt when the cutting means is not operative during the outward stroke so that said belt is moved with respect to the carriage and material is deposited during the outward stroke.

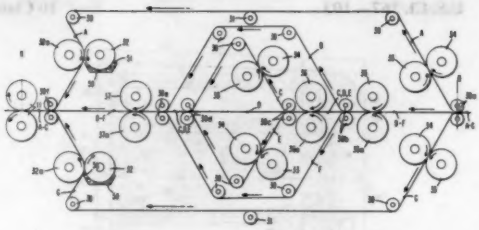
3,768,801

APPARATUS AND METHOD FOR MAKING MULTIPLE PLY SETS

Kenneth B. Maynard, Sherman, Tex., and Thomas M. Paulson, East Brunswick, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 17, 1972, Ser. No. 218,390
Int. Cl. B42b *1/02*
U.S. Cl. 270—53 **7 Claims**

Multiple ply sets having a primary (record) portion and a discardable (stub) portion are made by performing selected work operations concurrently with one set of tooling in a plurality of superposed webs. The webs are then diverted into paths of predetermined differing lengths, remerged, then severed into multiple ply sets. The differing path lengths assure that the manifestation of the selected work operations will be in the primary portion in those plies where it is desired (e.g., a thumb notch for carbon sheets) but effectively shifted into the discardable (detachable stub) portion in those plies (e.g., card or paper slip) where it is tolerable though not particularly desirable. This enables a significant reduction in number of work stations, and hence in equipment cost, set-up and maintenance time, overall machine size, and in-process web length.



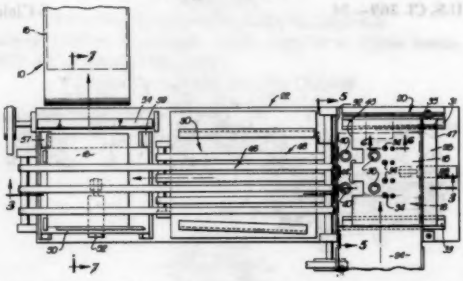
Some work operations are performed by pairs of rotary tool cylinders, each independently orientable in a predetermined number of rotative positions to provide a plurality of different combinations of rotative positions for performing correspondingly different work operations from one side or the other side of a web as it passes between said cylinders.

3,768,802

CARD FEEDER FOR FOLDING MACHINE

Carl F. Sjoman, Los Angeles, Calif., assignor to Team Industries, Los Angeles, Calif.

Continuation-in-part of Ser. No. 68,930, Sept. 2, 1970. This application Jan. 24, 1972, Ser. No. 220,138
Int. Cl. B65h *3/22, 5/02*
U.S. Cl. 271—12 **3 Claims**



An apparatus for supplying chip board cards to a machine for folding T-shirts therearound. A carriage removes the cards one at a time from the bottom of a stack in a magazine and feeds them to a conveyor system which delivers them to the folder. The carriage is provided with inclined pins which partially penetrate the lowermost card to grip it, and is also provided with a vacuum hold down for seating the lowermost card on the carriage even if the card is warped.

3,768,803

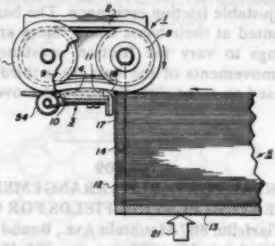
SHEET FEEDER

Klaus K. Stange, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 11, 1972, Ser. No. 225,513
Int. Cl. B65h *3/04*
U.S. Cl. 271—34 **11 Claims**

A separation belt is supported for movement about entrance and exit pulleys with a section of the belt between the pulleys positioned against curved retard means forming a sheet queuing throat. The belt contacts a stack of sheets near

its edge and separates the sheets from the stack into the throat. The throat queues or aligns the sheets and the belt advances the queued sheets onto the sheet handling system being served.

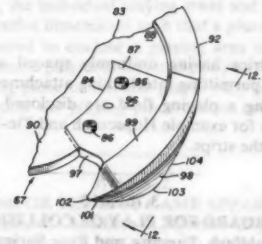


3,768,804

SIGNATURE GATHERING MACHINE WITH DISC SEPARATOR

Kermit E. Swanson, Naperville, Ill., assignor to R. R. Donnelley & Sons Company, Chicago, Ill.

Filed Nov. 26, 1971, Ser. No. 202,152
Int. Cl. B65h *3/08*
U.S. Cl. 271—101 **9 Claims**



An improved flatwise gathering machine for signatures having a vertical stack of signatures in a supply hopper, there being a horizontal rotating separator disc an edge portion of which is shaped to perform the dual function of deflecting the leading end portion of the bottom signature in the hopper downwardly into the grip of jaws on a transfer drum and simultaneously relieving the weight on the bottom signature by elevating the front of the balance of the stack in the hopper.

The cam disc has a mounting flange which receives either of two alternative signature separator adapters, one of which is especially constructed for use with signatures formed in a jaw folder and the other of which is particularly constructed for use with signatures formed in a former board folder.

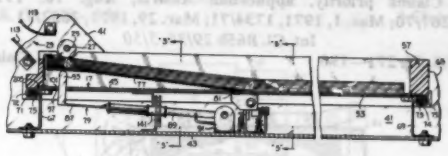
3,768,805

PAPER FEED APPARATUS

Henry R. Kuksa, Chicago, Ill., assignor to SCM Corporation, New York, N.Y.

Division of Ser. No. 821,763, May 6, 1969. This application May 18, 1972, Ser. No. 254,797
Int. Cl. B65h *1/08*
U.S. Cl. 271—126 **1 Claim**

A photocopying machine is provided with a paper feed arrangement wherein a stack of sheets is supported on a floor of a paper feed tray located on a shelf at an operating station beneath paper feed rollers for advancing the sheets from the tray. The forward end of the stack is supported by a plate hingedly connected to the floor, and an upwardly biased lifting member extends upwardly through openings in the shelf and the floor of the tray to lift the forward end of the stack into engagement with the feed rollers at a feeding position. The tray is provided with corner separators to separate an advancing topmost sheet from the remainder of the stack, and the stack is confined between side walls of the tray which guide the sheets being advanced by the feed rollers. The paper feed tray is movable from the operating station to a loading station outside the photocopying machine to facilitate loading another stack of sheets into the tray. To enable sheets of different widths to be used in the photocopying machine, the paper feed arrangement is provided with locating means for enabling paper feed trays accommodating sheets of different widths to be interchangeably placed on the shelf and properly positioned thereon for operation at the operating station.

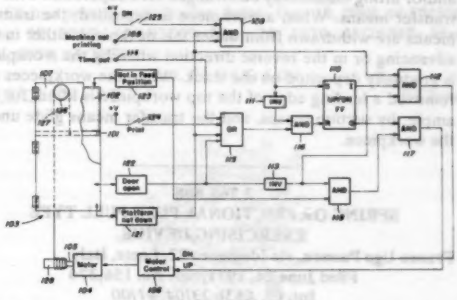


3,768,806

BI-DIRECTIONALLY MOVABLE PLATFORM CONTROL

Edward G. Rechil, Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1971, Ser. No. 214,299
Int. Cl. B65h *1/18*
U.S. Cl. 271—155 **13 Claims**

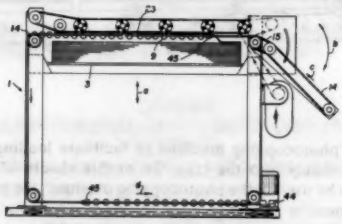


Apparatus for regulating the position of a platform upon which sheets of material are stacked is provided in accordance with the teachings of the present invention. Direction determining means is adapted to produce first and second signals for driving said platform in first and second directions, respectively. The assumption by said platform of an extreme first position is sensed by first sensing means. First means coupled to said first sensing means is responsive to the energization of a selecting switch to actuate the direction determining means to produce said first signal when the platform is not in its extreme first position. Second means is selectively responsive to the de-energization of the selecting switch, to signals representing the operating conditions of the apparatus adapted to operate upon said sheets of material and to a signal generated in response to a predetermined operator-initiated action to produce said second signal. Drive means, including drive control means, responds to the produced first and second signals to move the platform to its extreme first position and to a proper sheet feeding position, respectively.

3,768,807
METHOD AND APPARATUS FOR HANDLING FLAT, FLEXIBLE WORKPIECES

Ernst M. Spengler, Heustenstamm, Germany, assignor to Stanztechnik GmbH Roeder & Spengler, Bergen-Enkheim, Germany

Filed Aug. 4, 1971, Ser. No. 169,006
Claims priority, application Austria, Aug. 10, 1970, 7267/70; Mar. 1, 1971, 1734/71; Mar. 29, 1971, 2652/71
Int. Cl. B65h *29/36, 3/50*
U.S. Cl. 271—190 **10 Claims**



This apparatus handles flat, flexible workpieces, such as pieces of textile coming from or going to a punching machine disposed adjacent to the present handling apparatus. In other words, the workpieces may be stacked or removed from a stack. A movable surface, such as an endless conveyor delivers or receives the workpieces to or from a transfer means passing over the stack. The transfer means, in one embodiment, are parallel rods arranged in groups spaced from each other and rotatably supported at both ends in driven means such as endless chains the direction of movement of which is reversible. In another embodiment, the transfer means is an endless belt which is movable back and forth over the stack. Auxiliary means, such as workpiece retarding bands and/or lifting means may be arranged for cooperation with the transfer means. When a workpiece is deposited, the transfer means are withdrawn from under the workpiece either in the advancing or in the reverse direction whereby the workpiece is gradually deposited on the stack. When the workpieces are removed a leading edge of the top workpiece is lifted, for example, by suction means, and the transfer means glide under the workpiece.

3,768,808
SPRING OR FRICTIONAL PUSH PULL TYPE EXERCISING DEVICE

Franco Ugo Passera, via Idomeneo 72, Lecce, Italy

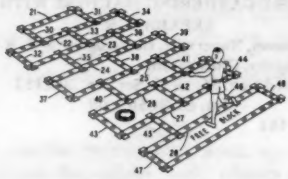
Filed June 24, 1971, Ser. No. 156,374
Int. Cl. A63b *23/04, 21/00*
U.S. Cl. 272—80 **4 Claims**

A portable physical training device which can be assembled or disassembled having a base member and pairs of elongated bars oriented in a generally upright position. The pairs of bars are interchangeably connectable to the base member. The upper ends of the bars receive the feet. The bars of one pair are mounted near their bottom ends for pivotal movement against an adjustable friction resistance. The bars of a second pair are mounted at their bases where there are located adjustable springs to vary the friction resistance to vertical straight-line movements of the bars. In a third pair, tension springs are used to resist directly vertical movements of the bars.

3,768,809
UNIVERSAL PORTABLE ARRANGEMENT FOR DELINEATING PLAYING FIELDS FOR GAMES

Matthew J. Ciarfello, 807 Mountain Ave., Bound Brook, N.J.

Filed July 27, 1972, Ser. No. 275,484
Int. Cl. A63h *33/06*; A63b *67/00*
U.S. Cl. 273—1 A **2 Claims**

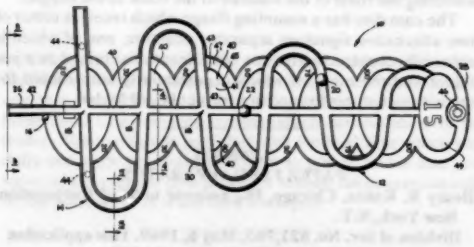


Flexible strips having uniformly spaced apertures along their lengths permitting interlocking attachments of the strips for delineating a playing field are disclosed. Various game fields such as for example Hopscotch and Tic-Tac-Toe can be formed with the strips.

3,768,810
GAME BOARD FOR PLAY OF COLLISION GAME

Adolph E. Goldfarb, Tarzana, and Rene Soriano, Los Angeles, both of Calif., assignors to Adolph E. Goldfarb, Tarzana, Calif.

Filed Dec. 27, 1971, Ser. No. 212,599
Int. Cl. A63f *7/14*
U.S. Cl. 273—120 R **4 Claims**



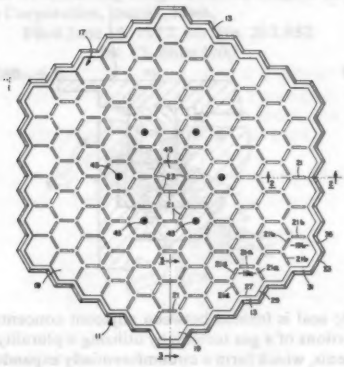
A board game comprising a board with a pair of tracks or pathways thereon which intersect one another at speced intervals. One track which may take a curved or circuitous route is longer than the other. A target playpiece, such as a marble, is caused to move along one track; then the other shooter playpiece is caused to travel along the other track. The shooter playpiece is moved at a speed and in timed relation to the movement of the target playpiece so as to attempt to collide with the target at a selected one of the intersections.

3,768,811

TRAP-BOARD GAME APPARATUS

Adolph E. Goldfarb, and Anita J. Goldfarb, both of 4614 Monarca Dr., Tarzana, Calif.

Filed Feb. 28, 1972, Ser. No. 229,666
Int. Cl. A63f 3/00
U.S. Cl. 273—131 B 11 Claims



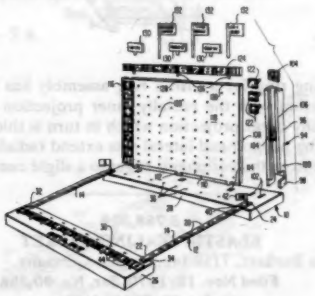
A game comprising a playing board having a plurality of individual defineable playing areas thereon, at least one separate movable playing piece or object for each player, and a plurality of separate barrier means for disposition on the playing board, the individual playing areas and barrier means having cooperative dimensions such that a plurality of barrier means is required to enclose a playing area on the playing board. The game is played in an attempt by one player to surround a playing piece of another player on a playing area of the board so that the playing piece cannot escape from the playing area.

3,768,812

RACING OR THE LIKE GAME APPARATUS

Napoleon A. Basa, 46 Cordillera St., Quezon City, Philippines

Filed Nov. 19, 1971, Ser. No. 200,466
Int. Cl. A63f 3/00
U.S. Cl. 273—134 CH 8 Claims



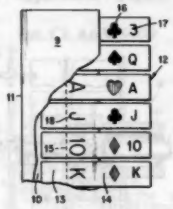
A game apparatus for simulating sporting events, such as horse races, has a plurality of individual and separate interfitting components that, in their assembled relationship, define a horizontal playing surface with which game pieces interengage in selective placement dictated by a chance means and also define a score board vertically disposed at the back end of the playing surface and to which indicators are selectively attached so as to visually present the progress and final out come of a game and the cumulative results for each player of a number of games and further define a turn indicator which is vertically disposed at the rear end of the playing surface and which supports, in selective fashion, player designators that regulate the order of play.

3,768,813

CARD GAME WITH PREDETERMINED HANDS

William M. Reynolds, 109 Ulysses Ln., Oak Ridge, Tenn.

Filed Dec. 13, 1971, Ser. No. 207,435
Int. Cl. A63f 1/10
U.S. Cl. 273—151 3 Claims



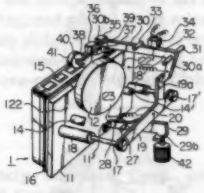
Individual hands for a card game are predetermined and dealt to a player in a unitized form. Each hand has a base card or strip to which are attached removable tabs of a uniform number for each hand. Each tab bears individual indicia corresponding to the standard card suits and the denominations in that suit. The tabs are singularly removed and played in sequence as are normal cards. If desired, additional indicia may be used to ascertain the order of the removal of each tab from the base card.

3,768,814

CASSETTE TAPE RECORDER

Masaaki Sato, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1970, Ser. No. 98,714
Claims priority, application Japan, Dec. 18, 1969, 44/101508; Dec. 18, 1969, 44/101509; Mar. 20, 1970, 45/26595; Mar. 20, 1970, 45/26596
Int. Cl. G11b 5/00
U.S. Cl. 274—4 E 9 Claims



Cassette tape recorder for use with a tape cassette having openings for receiving the magnetic heads and the pinch roller at its front side wall and openings for receiving the tape reel driving shafts and the capstan at its upper and lower walls. The tape recorder has a spring biased cassette loading plate movable together with the cassette loaded thereon in the direction parallel to the axes of the reel driving shafts and the capstan toward the inside of the tape recorder with the plane of the cassette loading plate positioned perpendicular to the direction of the movement thereof thereby permitting the cassette to be latched in the operative position engaging with the reel driving shafts and the capstan by latching guide pins of the tape recorder. The magnetic heads and the pinch roller are mounted on a mounting member which is so coupled with the cassette loading plate by coupling means that the magnetic heads and the pinch roller are moved substantially perpendicular to the movement of the cassette loading plate at about the end thereof in the direction toward the openings in the front side wall of the cassette loaded on the cassette loading

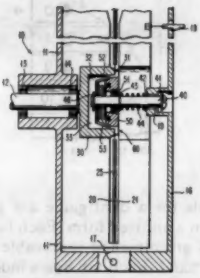
plate so as to be brought in their operative positions with the tape in the cassette.

3,768,815

APPARATUS FOR CLAMPING AND CENTERING A FLEXIBLE MAGNETIC DISK

Edward Landais Mathurin, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 21, 1972, Ser. No. 265,029
Int. Cl. A63d 7/00
U.S. Cl. 274—40 **10 Claims**



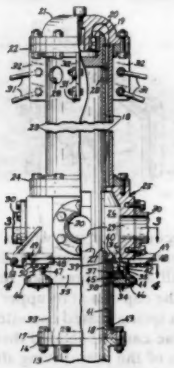
An apparatus for clamping and centering a flexible magnetic disk in a disk drive is disclosed. The apparatus comprises a hub including an inner wall defining a recess therein and a face portion for supporting the disk, expandable means for expanding against the inner wall of the hub before clamping the disk to the face portion of the hub, and means for wedging the expandable means into its expanded position.

3,768,816

SEAL FOR SEWAGE DISPOSAL SYSTEMS

David A. Bishop, 137 E. 15th St., St. Charles, Minn.

Filed Apr. 19, 1972, Ser. No. 245,548
Int. Cl. F16j 15/34
U.S. Cl. 277—65 **1 Claim**



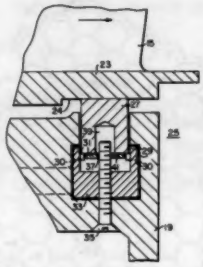
An annular member carried by one of a pair of concentric tubular members, one of which is stationary and the other of whice is mounted for rotary movement, the annular member defining an axially opening annular recess containing a sealing ring backed up by an annular compressible element disposed between the sealing ring and the bottom of the annular recess. A circumferential flange, carried by the other tubular member, has a marginal edge surface disposed in face to face sliding engagement with the sealing ring, the compressible element being under predetermined compression during such engagement.

3,768,817

STATIC SEAL FOR A GAS TURBINE

Louis C. Daniels, Media, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 27, 1972, Ser. No. 248,178
Int. Cl. F16j 9/24
U.S. Cl. 277—136 **7 Claims**



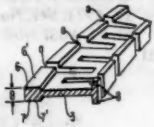
A static seal is formed between adjacent concentric cylindrical portions of a gas turbine by utilizing a plurality of arcuate segments, which form a circumferentially expandable ring, which is retained in a groove in the inner cylindrical portion and biased radially outward by flat springs. The segments are prevented from moving circumferentially by U-shaped blocks, which engage the mid portion of the arcuate segment and are fastened to the inner cylindrical portion of the turbine.

3,768,818

SPRING RING FOR A PISTON RING ASSEMBLY

Hiroshi Minegishi, Kawagoe, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Jan. 8, 1971, Ser. No. 104,877
Claims priority, application Japan, Jan. 12, 1970, 45/3371
Int. Cl. F16f 1/34
U.S. Cl. 267—1.5 **1 Claim**



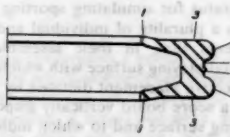
A spring ring for a piston ring assembly has an H-shaped cross section with the radially inner projection thicker than the raidally outer projection which in turn is thicker than the connecting portion and lateral slits extend radially inward, alternately from the peripheral edges to a slight center overlap.

3,768,819

ELASTIC SEALING GASKET

Christian Burkert, 7119 Ingelfingen, Germany

Filed Nov. 18, 1970, Ser. No. 90,586
Int. Cl. F16j 15/32
U.S. Cl. 277—206 R **1 Claim**



An elastic sealing gasket having a U-shaped cross section and comprising two spaced lips formed by the free terminus of the two legs of the U, and two sealing faces protruding from

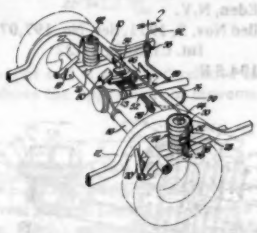
the base of the U away from the lips, and a recessed face separating said protruding sealing faces.

3,768,820

VEHICLE LEVELING CONTROL WITH VACUUM REGULATOR VALVE MEANS

Ming-Chih Yew, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 15, 1972, Ser. No. 262,952
Int. Cl. B60g 9/00
U.S. Cl. 280—6 R **6 Claims**



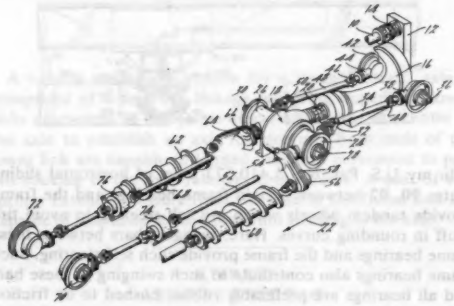
A vehicle leveling system including a pair of rear suspension springs each surrounded by a gas tight sleeve which is connected to a conduit. An air conduit and a vacuum conduit are selectively communicated to the conduit by means of a pair of spaced apart spring bands selectively moved to open and close the lines to maintain a vacuum leveling unit pressure which will contract the spring to add a simulated load thereon to produce a desired standing height relationship between the front and rear end of the vehicle. A maximum vacuum pressure regulator valve is located between the vacuum source and the vacuum line to control the simulated load when the vehicle is at a curb load.

3,768,821

SPLIT TORQUE DRIVETRAIN FOR MULTIPLE WHEEL VEHICLE

Dale C. Adams, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 4, 1972, Ser. No. 240,936
Int. Cl. B62d 57/00
U.S. Cl. 280—7 A **3 Claims**



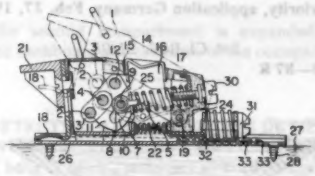
A split torque gearing arrangement for use in a multiple wheel vehicle comprising four bevel torque delivery gears, one of which serves as a torque input gear, each of the other bevel gears serving as output gears, said gears including an internal clutch structure for selectively establishing a driving connection between the input gear and one of the output gears while the other two output gears are inactive and for clutching the input shaft to each of the output gears for split torque delivery, spaced bearing means for journalling the output gears and for accommodating gear tooth reaction torque and means for adjusting the bearing means to establish proper clearances between meshing gear teeth and for maintaining a desired preload on the bearing elements.

3,768,822

METAL BINDING FOR A HEEL OF SKI BOOTS

Hiroaki Kanno, No. 4-19, 3-chome, Tokyo, Japan

Filed July 16, 1971, Ser. No. 163,331
Claims priority, application Japan, Sept. 16, 1970, 45/91947
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T **5 Claims**



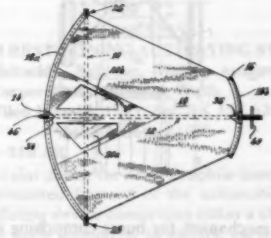
A metal binding for heel of ski boots which is characterized by having a fixed member which is fixed in such manner that its position can be freely adjusted through a screw engaging with screw thread provided on a base plate which is fixed on a ski bench, a crank mechanism holding frame which is connected to said fixed member through a spring in such manner as being freely slidable to the long way of ski bench and has at its both sides guide holes of almost triangle shape being consisted of an upper side, oblique side, and vertical side, a lever metal which is supported in a freely rotatable manner on said holding frame through an activating rotary axle, a connecting swing crank which is axially held in place on the holding frame by a second crank axle and has an arc shaped guide holes groove being matched with the above-mentioned guide holes at its portion, a pull-up arm metal which has its one end axially held in place in the swing crank and the other end being connected to the above-mentioned lever metal, a slide crank pin which is freely inserted into the above-mentioned guide holes and can be slided along said both guide holes further being always pressed to the heel direction of ski boots by the elastic power of the spring, and a lever metal releasing crank which is inserted in a freely slidable manner in a vertical hole provided in the above-mentioned lever metal and has its lower end supported by the above-mentioned slide crank pin.

3,768,823

SKATE SAIL

Daniel E. Goldberg, Stamford, Conn., assignor to Waterfun, Inc., Stamford, Conn.

Filed Apr. 5, 1972, Ser. No. 241,257
Int. Cl. A63c 3/00
U.S. Cl. 280—11.37 S **11 Claims**



A skate sail has a tubular, sectional mast and boom with the sections being joined by a split sleeve male member secured

into one end of a section and telescopingly engageable into the adjacent section. The sail is secured to the mast and boom by provision of a hook on the sectional jib bow which closely engages a bore in the forward end of the boom. The sail peaks and tail bow are secured to each end of the mast and the rear end of the boom by halyards and a lanyard engaging jamb cleats having notched ends.

3,768,824

STEERING WHEEL WITH SAFETY AIR CUSHION

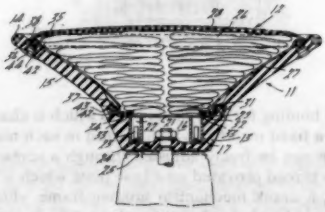
Herbert Kloppe, Cologne, and Dieter Pfadenhauer, Pulheim, both of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 10, 1972, Ser. No. 225,130

Claims priority, application Germany, Feb. 27, 1971, P 21 09 463.3

Int. Cl. B60r *21/08*

U.S. Cl. 280—87 R 2 Claims



Steering wheel with safety air bag for motor vehicles whereby the air bag is positioned within the continuous spoke of the steering wheel. The folded or collapsed air bag is arranged within a deformable air bag housing which together with a cover forms a unit which with a gas generator may be preassembled and installed into the recess between the angularly inclined sections of the continuous steering wheel spoke.

3,768,825

STEERING DEVICE FOR BUSES

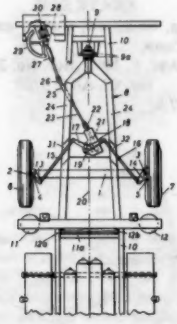
Gunnar Ivar Lennart Magnusson, Goteborg, Sweden, assignor to Aktiebolaget Volvo, Goteborg, Sweden

Filed Dec. 14, 1971, Ser. No. 207,814

Claims priority, application Sweden, Dec. 17, 1970, 17109/70

Int. Cl. B62d *3/04, 7/16*

U.S. Cl. 280—96 5 Claims



A steering mechanism for buses comprising obliquely outwards directed steering links being hingedly connected to an upright steering link shaft by means of outwardly directed levers. The upright steering link shaft is mounted for rotation upon turning of the vehicle steering wheel and constitutes the output shaft of the servo steering worm which is centrally located on the axle frame on which said upright shaft is likewise mounted so as to partake in the springing movements of said axle frame. The point in which the steering movement transmission means are mounted on the chassis frame is positioned approximately in the same vertical plane normally relatively the vehicle longitudinal axis as the suspension and bearing point of the axle frame on the chassis frame.

3,768,826

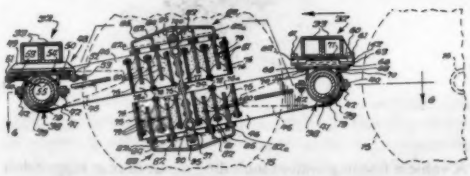
TANDEM WHEEL SPRING SUSPENSION

Albert F. Hickman, Eden, N.Y., assignor to Hickman Developments, Inc., Eden, N.Y.

Filed Nov. 9, 1971, Ser. No. 197,078

Int. Cl. B60g *11/22*

U.S. Cl. 280—104.5 R 10 Claims



Each of two or more tandem wheels are connected to one side of the vehicle frame by a hub structure journalled on the frame and having a fixed, radially projecting arm to the opposite end of which the corresponding tandem wheel is journalled. Compensating levers are severally fixed to project radially from these hub structures generally toward each other with their ends arranged above one another. The present improvement resides in providing resilient support for the vehicle frame on the wheels in the form of rectilinear movement shear rubber springs.

3,768,827

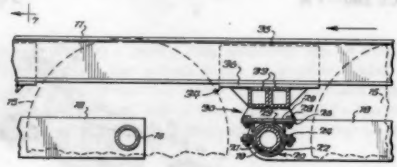
SELF-STEERING STANDEM AXLE SUSPENSION

Albert F. Hickman, 8009 N. State Rd., Eden Twp., Erie County, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,150

Int. Cl. B62d *9/00*

U.S. Cl. 280—104.5 R 8 Claims



In my U.S. Pat. No. 3,410,573 pairs of horizontal sliding plates **90, 92** between certain frame bearings and the frame provide tandem wheels which are self-steering to avoid tire scuff in rounding curves. Here, swinging bars between these frame bearings and the frame provide such self-steering. Such frame bearings also contribute to such swinging of these bars and all bearings are preferably rubber bushed to be friction free.

3,768,828

AUXILIARY SHOCK ABSORBER MOUNTING BRACKET

Victor A. Klein, Box 55, Hugoton, Kans.

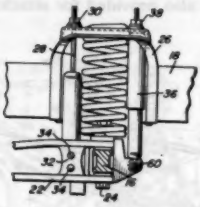
Filed Jan. 24, 1972, Ser. No. 220,050

Int. Cl. B60g *3/02*

U.S. Cl. 280—124 R 4 Claims

A combined U bolt clamp and U-shaped mounting bracket for attachment to the vertically shiftable axle end of a vehicle

and comprising a lower mounting point on the axle end for the lower end of an upstanding airplane-type hydraulic shock absorber whose upper end is anchored relative to a frame portion elevated above the upper limit of movement of the axle end.



3,768,829

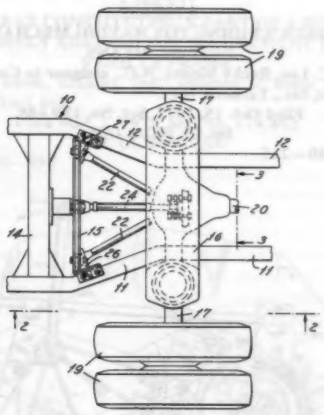
VEHICLE SUSPENSION

Denny D. Colovas; John S. Logan, and Richard R. Skruch, all of Dearborn, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sept. 25, 1972, Ser. No. 293,306

Int. Cl. B60g *11/16*

U.S. Cl. 280—124 R **4 Claims**



A vehicle suspension system for a "wagon steer" axle is comprised of a four-bar linkage including upper and lower links connected to ball joints above and below the center of the axle to establish an axis for steering. Both ends of the lower link are capable of limited universal movement to permit rocking of the axle relative to the frame. A pair of coil springs extend upwardly from the axle to the frame and are capable of lateral deflection to permit steering of the axle.

3,768,830

VEHICLE KNEE BAG

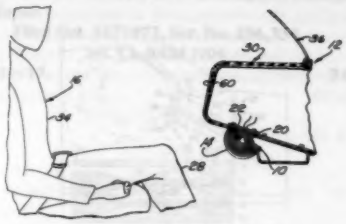
David P. Hass, Detroit, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sept. 23, 1970, Ser. No. 74,765

Int. Cl. B60r *21/06*

U.S. Cl. 280—150 AB **7 Claims**

An improved vehicle safety apparatus includes a confinement which is expanded from a collapsed condition upon the occurrence of an accident to restrain movement of an occupant of the vehicle. The confinement comprises two chambers or compartments, one of the compartments is immediately expanded to engage the legs of the occupant at or below the knee. After the first compartment has at least in part been expanded, the second compartment is expanded upwardly between the dashboard and the torso of the occupant.



3,768,831

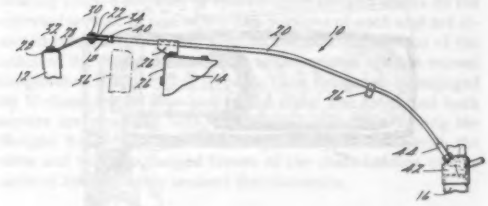
DETECTING AND ACTIVATING DEVICE

James L. Wesselman, Trenton, and Allen C. Wright, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 7, 1971, Ser. No. 150,316

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **5 Claims**



A device for detecting a crash of a vehicle and for activating a safety system for passengers of the vehicle is disclosed. The vehicle has a crushable member and a relatively stationary member forming portions thereof. The device includes a cable structure having a cable core and a cable sheath enclosing the core. The cable sheath is fixed in its relationship to the stationary member of the vehicle. Mounting structure secures a first end of the cable core to the crushable member of the vehicle. Additional mounting structure secures the portion of the cable sheath adjacent a second end of the cable core in a fixed position so that the second core end is guided thereby along a path of movement when the first core end is moved during a crash of the vehicle. An activating device is engageable by the second cable core end when moved along its path of movement. The activating device deploys a safety system for passengers of the vehicle when engaged by the second free end of the cable core.

3,768,832

CRASH RESTRAINING ACTIVATING SYSTEM

Eckart W. Schmidt, Bellevue, Wash., assignor to Rocket Research Corporation, Redmond, Wash.

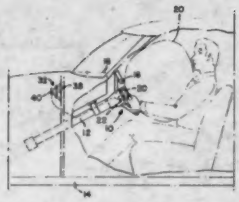
Filed June 14, 1971, Ser. No. 152,626

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **7 Claims**

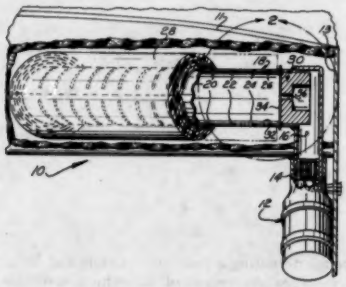
A crash restraint device for an automobile comprising an inflatable bag mounted forward of the automobile passenger seat. A bag inflating device comprising either a chemical composition which upon ignition by an electric current undergoes combustion to supply an inflating gas, or a container of compressed gas which is opened by electrically activated opening means. An electrical current generator responsive to crash im-

pact comprising a magnetized inertial mass in proximity to an inductance coil. Upon crash, the inertial mass passes through the inductance coil to generate a current which in turn in-



itiates inflation of the bag. There are forward bags and side bags activated by, respectively, a forward impact oriented generator and lateral impact oriented generators.

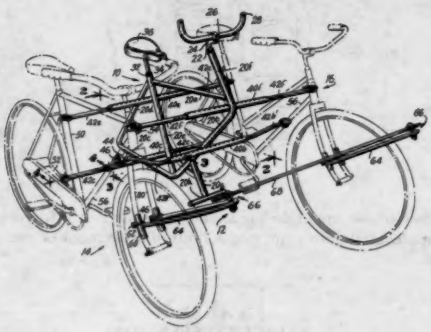
3,768,833
FLOW CONTROL VALVE
Robert Henry Broucksou, Grosse Pointe Woods, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Nov. 26, 1971, Ser. No. 202,093
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **7 Claims**



An improved safety apparatus for protecting an occupant of a vehicle during the occurrence of a collision includes an expandable confinement having a collapsed condition and an expanded condition for restraining movement of an occupant of a vehicle during a collision and means for expanding the confinement to the operative condition during a collision. The means for expanding the confinement includes a fluid supply which is actuatable to supply fluid for expanding the confinement, means for actuating the fluid supply in response to a collision, a diffuser means in fluid communication with the confinement for receiving fluid from the fluid supply and for distributing the fluid to the confinement for expanding the confinement, and means cooperating with the diffuser for controlling an initial portion of fluid distribution from the diffuser to the confinement. In a preferred embodiment, the means cooperating with the diffuser means includes a member slidable along a surface of the diffuser under the influence of fluid pressure from the fluid supply to sequentially uncover a series of openings in the diffuser thereby controlling the flow of fluid from the diffuser to the confinement.

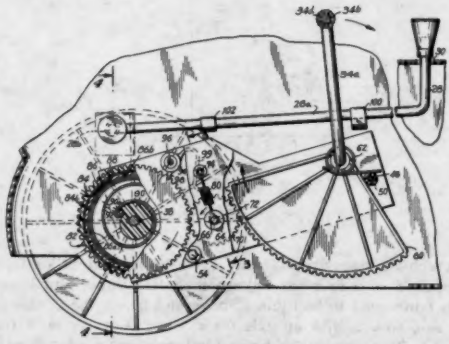
3,768,834
COUPLER FOR INTERCONNECTING TWO BICYCLES
James Singleton, 113-21 202nd St., St. Albans, N.Y.
Filed June 8, 1972, Ser. No. 261,067
Int. Cl. B62k *13/06*
U.S. Cl. 280—209 **6 Claims**

There is disclosed a coupler for interconnecting two bicycles. The coupler includes a main support member having a vertical frame and eight telescoping crossbars, four on each side of the vertical frame, the ends of which can be attached to two side-by-side bicycles. A seat, for carrying a child, for example, is provided on top of the central frame member. A toggle mechanism is also provided for attachment to the front



wheel supports to insure that the front wheels turn together and are aligned at all times. The widths of the main support member and the toggle mechanism can be adjusted so that the separation between the two bicycle riders can be set as desired.

3,768,835
CHILDREN'S RIDING TOY HAVING MECHANICAL DRIVING MEANS
Norman C. Lee, Rocky Mount, N.C., assignor to Carolina Enterprises, Inc., Tarboro, N.C.
Filed Oct. 15, 1971, Ser. No. 189,648
Int. Cl. B62m *1/04*
U.S. Cl. 280—215 **8 Claims**

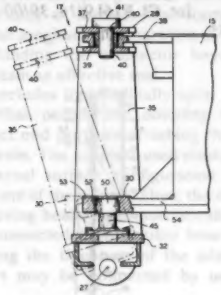


A children's riding toy having a spring driven mechanical driving means which a child can wind to propel the toy. The children's riding toy is designed so that a child can move the toy manually independently of the driving means and means is provided for preventing said spring driving means from being overwound.

3,768,836
KINGPIN COUPLING FOR TRACTOR SCRAPER
Melvin L. Walser, Lubbock, Tex., assignor to Clark Equipment Company, Buchanan, Ind.
Filed Sept. 29, 1972, Ser. No. 293,728
Int. Cl. B62d *53/02*
U.S. Cl. 280—492 **6 Claims**

A kingpin coupling having an upper kingpin and a lower pintle connection on a vertical axis and being pivotally

mounted at the bottom on a longitudinal axis, the pintle having a spherical bearing portion permitting quick attachment at



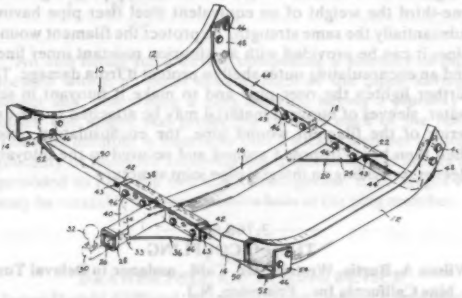
the lower end and then subsequent alignment in the vertical axis for insertion of the kingpin by rotating the coupling about the longitudinal axis.

3,768,837

TOW BAR CONSTITUTING A PART OF A HITCH ASSEMBLY ADAPTED FOR SECUREMENT TO A VEHICLE FRAME

Robert P. Reese, Elkhart, Ind., assignor to Reese Products, Inc., Elkhart, Ind.

Filed Mar. 1, 1971, Ser. No. 119,462
Int. Cl. B60d *1/00*
U.S. Cl. 280—495 8 Claims



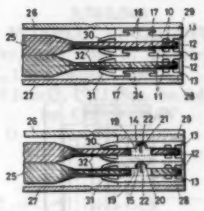
A tow bar constituting a part of a hitch assembly and including an elongated support member which extends longitudinally and under the vehicle centered between the sides thereof. One end of the support member is located near the rear bumper of the vehicle while the opposite end of the member extends forwardly of the bumper. A pair of arm members is secured to the forward end of the support member and another pair of members is secured to the support member between the ends thereof. The arm members of each pair of arm members extend laterally outwardly in opposite directions from the support member. Both pairs of arm members extend transversely of the vehicle frame and include means at the free ends thereof to secure each pair of arms to oppositely spaced parts of the vehicle frame. The support member defines a recess for receiving a coupling part of the hitch assembly.

3,768,838

BINDER

Ryoji Shibata, 3–45 Higashi Takaai-cho, Higashi Sumujoshi-ku Osaka, Japan

Filed Oct. 10, 1972, Ser. No. 296,334
Int. Cl. B42d *3/04*
U.S. Cl. 281—17 7 Claims



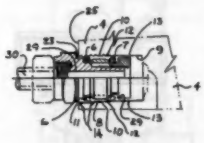
One or more sheet-holding units for holding together a number of sheets of any suitable material are removably secured between front and back covers. Each sheet-holding unit is composed of a spine portion and a pair of flap portions extending substantially parallel to each other from both sides of the spine portion. For interconnecting two or more sheet-holding units, a plurality of spaced-apart flanged bosses on the external surface of one of the flap portions of each unit are inserted into corresponding slots on the external surface of the other of the flap portions of the adjacent unit and are moved longitudinally of the slots to cause their flanges to be engaged by U-shaped seats provided to the slots. The front and back covers are provided with different adapter units having the flanged bosses and the slots, respectively, to mate with the slots and with the flanged bosses of the sheet-holding unit or units to be removably secured therebetween.

3,768,839

EXPANDABLE CARBURETOR FITTING

Vernon F. Thompson, St. Louis, Mo., assignor to Tomco, Inc., St. Louis, Mo.

Filed June 14, 1972, Ser. No. 262,533
Int. Cl. F16l *21/02*
U.S. Cl. 285—15 4 Claims

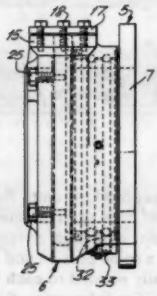


A carburetor fitting is provided having expansive elements which positively lock the fitting within the carburetor fuel inlet and provide a liquid seal against fuel leakage. The fitting is designed specifically to provide a liquid seal deep within the inlet opening, beyond any threads common to such inlets. The preferred embodiment utilizes two O-rings of deformable material which are expanded intentionally once the fitting is positioned within the carburetor fuel inlet passage. The fitting is also designed to permit attachment of a fuel line without the need of hose couplings or other connection means.

3,768,840
PIPE COUPLINGS

Keith Allan Upton, Westwood, Margate, and Raymond William Elliot, Broadstairs, both of England, assignors to Emco Wheaton U.K. Limited, Margate, England

Filed Mar. 4, 1971, Ser. No. 121,032
Claims priority, application Great Britain, Mar. 6, 1970, 10,976/70
Int. Cl. F16l 55/00
U.S. Cl. 285—16 14 Claims

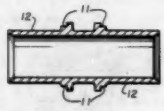


A pipe coupling, particularly for interconnecting large-diameter load-bearing pipes, comprising a pair of rotatably interconnectible tubular coupling elements adapted to be sealed relative to one another by an internal sealing ring, one of the elements being formed with an opening for access to the coupling interior to enable the sealing ring to be replaced, and internal holding means for the said sealing ring which holding means is releasable without any relative movement of the interconnected coupling elements being necessary, so that the sealing ring may be replaced without disconnecting the coupling to any extent.

3,768,841
PLASTIC PIPE JOINT

Michael F. Byrne, Long Island City, N.Y., and Douglas V. N. Powelson, Audubon, Pa., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 868,139, Oct. 21, 1969, abandoned. This application Oct. 2, 1970, Ser. No. 77,489
Int. Cl. F16l 13/02
U.S. Cl. 285—21 10 Claims

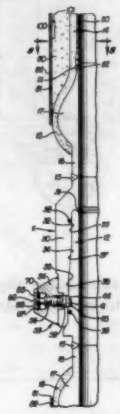


An improved heat fused pipe assembly joint is provided using an internally positioned fitting having an annular insert portion substantially the same diameter as the internal diameter of the pipe section to be joined and a shoulder portion having a larger diameter. The pipe section is joined to the fitting by heating the pipe end sufficiently to soften it, heating the insert portion of the fitting so as to soften its exterior wall, inserting the fitting so that the end edge of the pipe section substantially abuts the shoulder portion of the fitting and crimping to cause fusion of the pipe to the fitting. For additional strength, the fused pipe joint assembly may be provided with an externally positioned sleeve.

3,768,842
LIGHT WEIGHT MARINE RISER PIPE

Arthur G. Ahlstone, Ventura, Calif., assignor to Vetco Offshore Industires, Inc., Ventura, Calif.

Filed Aug. 5, 1971, Ser. No. 169,199
Int. Cl. F16l 9/14, 39/00
U.S. Cl. 285—55 2 Claims

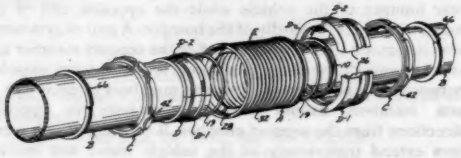


A marine riser pipe system for use in drilling underwater well bores comprising pipe joints coupled to one another by steel connector members, each pipe joint being a wound structure of fiberglass filaments coated with an epoxy or other suitable resin, which sets to bond the filaments in place, the filament wound structure being secured to the steel connector members, thereby providing a light weight pipe joint, and corresponding light weight marine riser pipe string when the connector members of adjacent joints are secured together, the weight of the filament wound marine riser pipe being about one-third the weight of an equivalent steel riser pipe having substantially the same strength. To protect the filament wound pipe, it can be provided with an abrasion resistant inner liner and an encapsulating outer shell to protect it from damage. To further lighten the riser pipe and to make it buoyant in sea water, sleeves of buoyant material may be attached to the exterior of the filament wound pipe, the encapsulating outer shell then being disposed around and secured to the buoyant sleeves, providing an integral pipe joint structure.

3,768,843
TUBING COUPLING

Wilson A. Burtis, Westminster, Calif., assignor to Delaval Turbine California Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 2,470, Jan. 13, 1970, Pat. No. 3,647,246. This application Jan. 5, 1972, Ser. No. 215,456
Int. Cl. F16l 55/00
U.S. Cl. 285—114 8 Claims



A coupling of flexible structure for removably connecting the adjacent, generally axially aligned ends of two lengths of

tubing, which tubing end portions have transverse, circumferentially extending, outwardly projecting beads formed thereon. The coupling includes a tubular flexible connector that effects primary seals with resilient rings that encircle said end portions, and the rings in turn being in sealing engagement with said beads. A flexible spring loaded cable removably engages slotted portions of ferrules that form a part of the coupling to prevent longitudinal separation of the ferrules and without axially loading the connector beyond the extent necessary to maintain an effective seal.

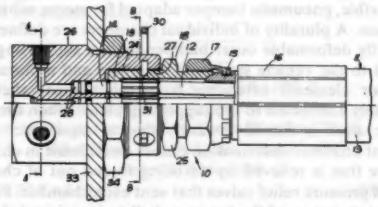
The coupling includes longitudinally split, generally cylindrical adapters that permit the coupling to be used to removably connect end portions of tubing that already have beads formed therein. The adapters used must, of course, conform to the external surface configuration of the already formed end portions of the tubing. Thus, the coupling may be used on tubing having beaded end portions that were initially intended to be connected by a flexible hose and associated clamps. By varying the thickness of the adapters tubing of various diameters may be connected by use of the same coupling.

3,768,844

END FITTINGS

Stanley Harold Goward, and Michael Robert Goddard, both of London, England, assignors to BTR Industries Limited, London, England

Filed Feb. 4, 1972, Ser. No. 223,494
Int. Cl. F16l *39/00*
U.S. Cl. 285—137 R **6 Claims**



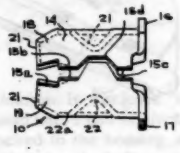
An end fitting for a device comprising a plurality of pipes located within an outer sheath, each of the pipes having a spigot and, comprising a plug member having a plurality of holes, one spigot end projecting through each of the holes. The plug member is insertable into a socket member having a plurality of holes for receiving the spigot ends and means are provided to hold the two members together. Each spigot end may be rotatable in the respective hole in the plug member.

3,768,845

DRAWER PULL ANCHORING DEVICE

James Harold Gilliland, Memphis, Tenn., assignor to Memphis Furniture Manufacturing Co., Memphis, Tenn.

Filed May 4, 1972, Ser. No. 250,315
Int. Cl. F16d *1/06*
U.S. Cl. 287—53 H **6 Claims**



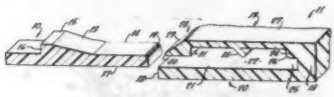
An anchoring device formed from a single piece of sheet metal for securing a cylindrical stud portion of a drawer pull or the like in a socket in a drawer front. The anchoring device is in the form of a split collet having a cylindrical sleeve portion terminating in outwardly projecting flange segments at one end and inwardly flaring tapered conical segments at the other end providing tooth formations to hold the stud in the sleeve portion following insertion. The sleeve portion includes a pair of inwardly bowing convex anchoring prongs to be driven outwardly into the drawer front material to anchor the sleeve portion in the socket.

3,768,846

INTERLOCKING JOINT

Raymond Hensley, and Ida F. Hensley, both of 2314 Roscomare Rd., Los Angeles, Calif.

Filed June 3, 1971, Ser. No. 149,723
Int. Cl. F16b *5/07*
U.S. Cl. 52—758 D **24 Claims**



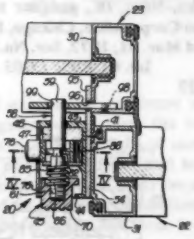
A joint construction including a first member having an inclined ramp inwardly of a rounded outer edge, with a flat surface at the upper end of the ramp and a shoulder rearwardly of the flat surface, the second portion of the joint including parallel flanges defining an opening, one of the flanges having a flat surface adjacent the other, the other flange having a thick portion at its inner end to define a narrower portion of the opening, a bendable intermediate portion and a bead at the outer end having a beveled outer surface, a rounded edge and an inner shoulder adapted to lock with the shoulder of the first member when the joint is assembled. An inwardly and rearwardly inclined lip on the deflectable flange helps align the parts. Means for holding the shoulders in a separated condition may be included for permitting release of the joint.

3,768,847

SECURITY LOCK MEANS

Elwood W. Buck, Jr., 109 N. Almansor St., Alhambra, Calif., and Ernst F. Nettmann, 1193 Kiowa Ave. Brentwood, West Los Angeles, Calif.

Filed July 29, 1971, Ser. No. 167,334
Int. Cl. E05c *1/14*
U.S. Cl. 292—179 **2 Claims**



A compact secondary lock means for securement of relatively movable sliding panels or door closures and comprising a lock bolt pressure actuated into locking position with a bolt receiving opening provided on one of the relatively movable members and releasable by pressure against a release member movable along an axis normal to the axis of the lock bolt, the lock bolt being returned to retracted unlocked position by

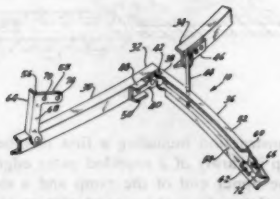
spring biasing means. The release member may be pressure actuated by either hand or foot, the lock means being readily actuated to unlocked position in the event of an emergency. A security lock means which in locked position, restrains relative movement of the members in directions such as in and out, up and down, and parallel to a door panel, and is particularly adaptable to various types of movable doors or closures such as sliding door and window constructions and swinging doors.

3,768,848

CONTAINER ASSEMBLY AND IMPROVED CLAMPING RING THEREFOR

Cesar Santoni, Hamilton, Ontario, Canada, assignor to Grief Bros. Corporation, Delaware, Ohio

Filed June 10, 1971, Ser. No. 151,801
Int. Cl. E05c *19/18*
U.S. Cl. 292—256.69 **6 Claims**



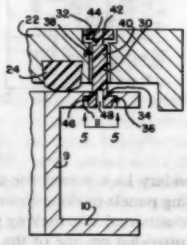
An improved split clamping ring releasably locks a cover to an open end of a drum or container. The clamping ring includes a locking assembly having a locking lever and linkage connected between the adjacent ends of the split ring and to the lever whereby the lever may be pivoted towards and away from the ring to, respectively, close and open the ring. A latch connected to the split ring is also pivotally mounted towards and away from the ring to retain the lever in locked position and permit its release, respectively. A hinge strap secured to one end of the split ring serves to pivotally connect the base of the lever to this ring end and is provided with outwardly projecting flanges which are adapted to engage with internal adjacent surfaces of the lever to prevent unintentional or undesirable lateral movement of the lever when in a locked position thereby assuring the proper location and relationship of the clamping ring relative to the associated surfaces of the cover and drum.

3,768,849

FLAG PLUG FOR VESSEL OPENINGS

Thomas H. Sytko, Niles, Ill., assignor to General American Transportation Corporation, Chicago, Ill.

Filed Mar. 31, 1972, Ser. No. 242,399
Int. Cl. E05c *13/05*
U.S. Cl. 292—327 **5 Claims**



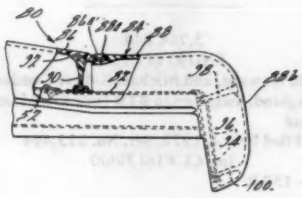
A flag plug for use with a cover for an opening in a vessel such as the hatch cover or manway opening of a railroad car. The flag plug includes a shank portion having a barbed end and a head with a reduced diameter portion connecting the shank and head. The plug is adapted to fit into aligned openings in the cover and the vessel when the cover is closed. When the cover is closed, the plug is substantially flush with the top of the cover. When the cover is opened, the head of the plug will break off. The plug is used to provide an easily recognizable signal as to whether the cover has been opened.

3,768,850

PNEUMATIC FLEXIBLE BUMPER

David W. Barton, Birmingham, and George H. Muller, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 836,776, June 26, 1969, abandoned.
This application Nov. 24, 1971, Ser. No. 201,828
Int. Cl. B60r *19/10*
U.S. Cl. 293—71 P **5 Claims**



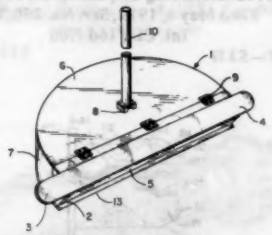
A flexible, pneumatic bumper adapted for motor vehicle applications. A plurality of individual chambers are defined by a resiliently deformable outer bumper shell, a supporting plate secured to the vehicle structural members and a plurality of separator elements extending from the bumper shell and removably connected to the supporting plate. When the outer bumper shell is forced inwardly due to an impact force, resultant chamber deformation causes an increase in chamber pressure that is relieved by air being forced out of chamber through pressure relief valves that vent each chamber. Following impact, return of the bumper shell to its original shape is slowed by a restricted air flow into the chambers through the valves, thereby preventing bumper rebound forces.

3,768,851

DEBRIS COLLECTION DEVICE

Ralph Capron Freeman, 125 N. Galveston St., Arlington, Va.

Filed Sept. 16, 1971, Ser. No. 181,059
Int. Cl. A47l *13/06*
U.S. Cl. 294—55 **3 Claims**



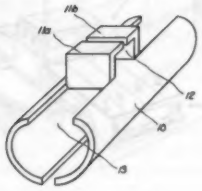
A device for removing debris from sidewalks, roads, curbs, grass, rugs, floors and other areas including a container portion with an opening, a lip portion, a door or cover in the form of a kickplate with appendages, and a handle means.

3,768,852

LIFTING PIECE FOR HOISTING A LARGE PACKAGE OR THE LIKE

Karl Johan Back, and Aimo Kyla-Junnila, both of Helsinki, Finland, assignors to Dy Cyklop AB, Helsinki, Finland

Filed Sept. 17, 1971, Ser. No. 181,348
Claims priority, application Finland, Sept. 18, 1970, 2560
Int. Cl. B66c *1/12*
U.S. Cl. 294—74 **2 Claims**



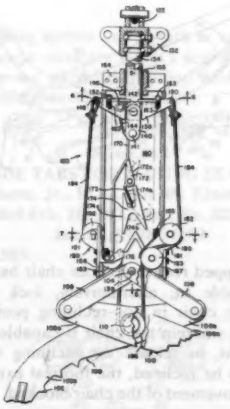
There is provided a lifting piece for hoisting a large package tied by winding means, such as a looplike cable, which lifting piece has one or more openings through which the binding means can be fitted running over a channel for a lifting hook in said lifting piece. This piece is made out of a plate-like material by cutting and bending. It may thus be produced for instance by cutting two juts out of a platelike material, bending these juts against each other, possibly into overlapping relationship, so that the juts form a lifting channel or eye for the lifting hook and two openings for the binding means are formed simultaneously.

3,768,853

SINGLE LINE LOG GRAPPLE

David G. Rennie, Burnaby, British Columbia, Canada, assignor to Skagit Corporation, Sedro Woolley, Wash.

Filed Mar. 31, 1967, Ser. No. 627,484
Int. Cl. B66c *1/38*
U.S. Cl. 294—110 **18 Claims**



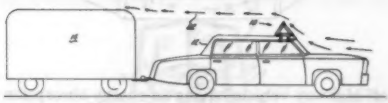
A grapple mechanism is disclosed including a housing suspended from a load line, a pair of pivotally connected load-engaging arms attached to the housing, a lift mechanism associated with the housing including a cycling mechanism which controls the pivot position of the load-engaging arms such that, upon successive applications of a lifting force from the load line, the load arms are alternately held open or closed around a log or similar structure to be lifted. The upper ends of the load arms are connected through links to a link pivot, and the cycling mechanism operates to vary the distance between the link and arm pivots whereby increasing the distance causes the arm sections to move toward each other to close the grapple and decreasing the distance pivots the arms away from each other to open the grapple. Three embodiments disclose somewhat different mechanisms for accomplishing the cycling operation, two being latching devices and the third using a rotatable cam structure.

3,768,854

WIND DEFLECTOR FOR A TOWED TRAILER

Daniel H. Johnson, Rt. 1, Charlton, Iowa, and Harry T. Johnson, Box 83, Williamson, Iowa

Filed Oct. 26, 1971, Ser. No. 192,221
Int. Cl. B62d *35/00*
U.S. Cl. 296—1 S **6 Claims**



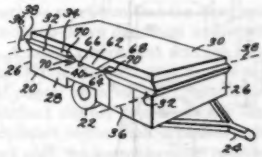
A wind deflector which is detachably and adjustably mounted to the roof of a vehicle to which a trailer is hitched whereby the wind is deflected upwardly so as to pass over the trailer and reduce the wind resistance which the trailer normally presents.

3,768,855

COLLAPSIBLE AND EXPANDABLE ENCLOSURE

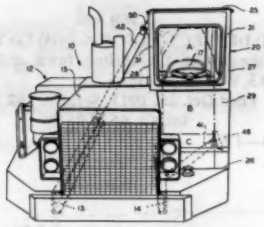
Jay H. Laue, 803 Mira Vista Drive, S.E., Huntsville, Ala.

Filed Aug. 28, 1972, Ser. No. 284,149
Int. Cl. B60p *3/34*
U.S. Cl. 296—27 **18 Claims**



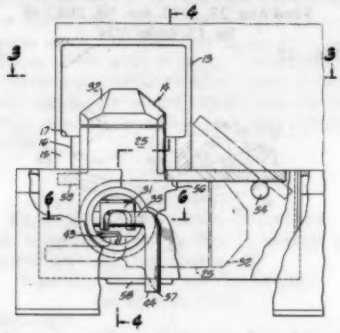
A collapsible and expandable enclosure is made of rigid panels. Two rectangular panels form the top and bottom. Other panels form side and end walls of sectional construction. The end walls are in two upper and lower rectangular sections which are hinged to each other on a horizontal axis and also to the end edges of the top and bottom. The side walls are in six sections, three upper and three lower. The center side wall sections are trapezoidal in shape and are hinged to the side edges of the top and bottom. The end side wall sections are in the shape of isosceles triangles and are hinged to adjacent end wall sections and also to adjacent center side wall sections. In the collapsed condition of the enclosure all the end and side wall sections are folded inwardly between the top and bottom. In the expanded condition the wall sections unfold outwardly, with the side wall sections being pulled outwardly automatically by their hinged connection with the end wall sections until the three upper and three lower side wall sections abut along a horizontal parting line.

3,768,856
ROLL-OVER PROTECTION CAB
Howard E. Stuller, Lubbock, Tex., assignor to Clark Equipment Company, Buchanan, Mich.
Filed Oct. 4, 1971, Ser. No. 185,983
Int. Cl. B62d 33/06
U.S. Cl. 296—28 C 7 Claims



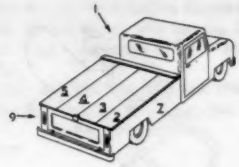
An off-highway vehicle having an energy absorption structure which protectively houses the operator and is permitted a limited arcuate movement about an axis parallel to the vehicle centerline when side thrusts or vertical loads are encountered above a predetermined minimum load such as might occur if the vehicle were to upset or roll on its side.

3,768,857
DISAPPEARING TWIST LOCK ASSEMBLY
Terry F. Horton, Whittier, Calif., assignor to Utility Trailer Manufacturing Company, City of Industry, Calif.
Filed May 5, 1972, Ser. No. 250,578
Int. Cl. B65j 1/22
U.S. Cl. 296—35 A 11 Claims



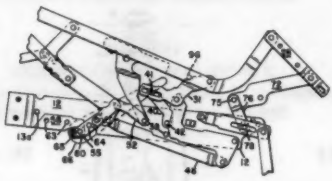
A disappearing twist lock assembly is mounted on the flat bed of a vehicle for securing a conventional box-like shipping container thereto. The lock assembly includes a housing mounted between parallel stationary walls and turnably supported thereon by means of oppositely projecting hollow trunnions. A twist lock member is mounted in the housing to turn about an axis intersecting the trunnion axis at right angles, and this member has an enlarged head to engage a shoulder within a receptacle provided on the shipping container. A lever is secured to the twist lock member and projects through both of said hollow trunnions. An overcenter spring connected between an extending end of the lever and the remote trunnion holds the twist lock member in either locked or unlocked position with respect to said housing.

3,768,858
TRUCK BOX COVER
Albert George Joseph Boismier, Windsor, Ontario, Canada
Filed Dec. 23, 1971, Ser. No. 211,404
Claims priority, application Canada, Nov. 19, 1971, 128078
Int. Cl. B60j 7/10
U.S. Cl. 296—137 B 10 Claims



A truck box cover including two pairs of panels, each of which pairs has an outer panel and an inner panel. The outer panel is hingedly secured to the side wall of the truck box. The inner panel is hingedly secured to the outer panel. The cover can be folded from a position wherein the panels enclose the top of the box, to a position, wherein the panels of each pair are overlaying each other and are positioned outside their respective side wall, parallel to same. A six-panel embodiment is also disclosed. The cover is also provided with a foldable bulkhead.

3,768,859
CHAIR
Walter Clark Rogers, Jr., High Point, and Morton Snitzer, Rocky Mount, both of N.C., assignors to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed Jan. 4, 1971, Ser. No. 103,412
Int. Cl. A47c 1/02
U.S. Cl. 297—85 8 Claims

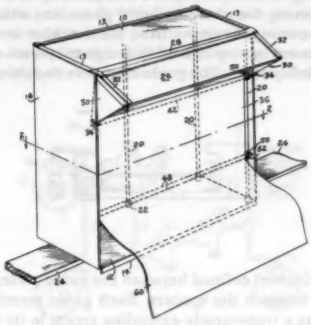


A footrest equipped rocker-recliner chair having a linkage mechanism actuable to, alternatively, lock the reclining mechanism of the chair in non-reclining position with the footrest collapsed wherein the chair is capable of to and fro rocking movement, or release the reclining mechanism to allow the chair to be reclined, the footrest extended, and to and fro rocking movement of the chair blocked.

3,768,860
PORTABLE COLLAPSIBLE SHELTER
Joseph K. Barker, Rt. 2, Abingdon, Va.
Filed Nov. 29, 1971, Ser. No. 202,884
Int. Cl. A47c 7/66
U.S. Cl. 297—184 7 Claims

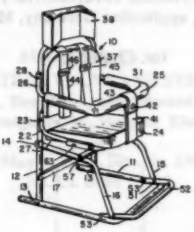
Top and bottom plates, vertically separated when in use, are connected by flexible end and back walls, the user sitting on

the bottom plate and the front of the structure being at least partially open for the viewing of a sporting event, the top and



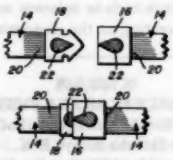
bottom plates being held in vertically spaced relation by posts or similar means which are removable for the vertical collapsing of the structure.

3,768,861
TWO-POSITION CHILD'S SEATING SYSTEM
Morris I. Goldberg, 39 Locke Road, Newton, Mass.
Filed Apr. 10, 1972, Ser. No. 242,615
Int. Cl. A47d *1/10*
U.S. Cl. 297—253 2 Claims



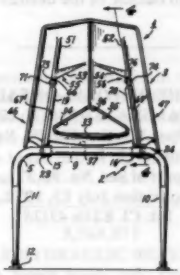
A child's seating system useful both as an infant's automobile seat and as an auxiliary infant's seat on any flat surface wherein means are provided to adjust said seat between an upright position and a reclining position.

3,768,862
COLOR CODE TABS FOR MATING SEAT BELT ENDS
Roger E. Williams, Jr., Rt. 2, Box 48, Kinston, N.C.
Filed Feb. 10, 1972, Ser. No. 225,115
Int. Cl. A62b *35/60*
U.S. Cl. 297—385 1 Claim



Color coded tabs are provided for attachment to the fastening elements of seat belt straps. Matching pairs of the straps have a common color for simplifying the process for selection of matching pairs of straps. The tabs may be applied to the fastening elements as by an adhesive, and are advantageously in the form of pointers pointing in the direction where mates the fastening element matched with the fastening element on which a particular tab is arranged.

3,768,863
CHAIR CONSTRUCTION
Roy E. Jennings, Temple, Tex., assignor to Royal Seating Corporation, Cameron, Tex.
Division of Ser. No. 797,949, Feb. 10, 1969, Pat. No. 3,628,832. This application June 15, 1971, Ser. No. 153,260
Int. Cl. A47c *1/12, 5/00*
U.S. Cl. 297—445 16 Claims

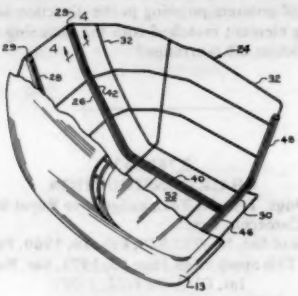


The chair includes a base structure and a seat structure secured to the base. The base structure has pairs of downwardly extending legs connected by a horizontal portion. The horizontal portions are secured to each other by spaced apart pairs of angle bracket assemblies, with each angle of a pair separated from the other to facilitate assembly. The seat structure includes an integrally molded seat-back shell mounted on a tubular frame having brackets which slip over and are secured to one of the angles of each of the angle bracket assemblies. The seat structure is held to the base structure by machine screws so that the chair assembly can be shipped in a knocked-down condition and readily assembled after shipment. A tablet arm or desk arm can be secured to the chair if required. While the back-seat-shell is molded from an essentially rigid plastic material, the construction is such that the back can deflect slightly relative to the seat to enhance comfort. The comfort of the shell is further enhanced by the upwardly curved seat, the buttocks relief opening in the back of the shell, and the shallow V-shaped spine relief along the back of the shell.

3,768,864
SEATING STRUCTURE WITH FOAM EMBEDDED REINFORCEMENT FRAME
Albin J. Niewulis, Hickory, N.C., assignor to Hoover Ball and Bearing Company, Saline, Mich.
Filed Apr. 24, 1972, Ser. No. 246,826
Int. Cl. A47c *7/20*
U.S. Cl. 297—454 3 Claims

A metal frame for a foam body seating structure having a base and back and supports which extend upwardly from the base. The metal frame is embedded in the foam body and has load resisting bars therein which extend between the base and the back of the seating structure and which also extend

between the arms and the base of the seating structure. The load resisting bars have web portions which provide effective



load resistance, and wires are provided which interconnect the load bars and form an outline of the desired shape of the foam body.

3,768,865

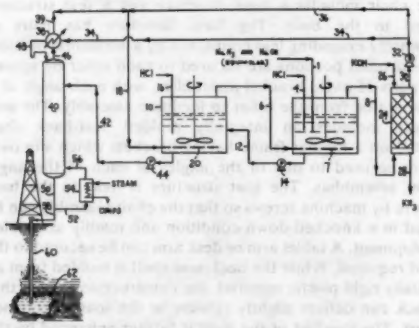
PROCESS FOR THE DISPOSAL OF SALT SOLUTIONS CONTAMINATED WITH AZIDE

Frederick C. Dehn, New Martinsville, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 92,371, Nov. 24, 1970, abandoned. This application July 13, 1972, Ser. No. 271,436

Int. Cl. E21b *43/28*

U.S. Cl. 299—4 **18 Claims**



The disposal of salt solutions contaminated with azide is accomplished by depositing the solution in a subterranean cavity, maintaining the solution in the subterranean cavity until it is essentially free of azide, and pumping the essentially azide-free solution to the surface.

3,768,866

REPLACEABLE FRICTION MEMBERS FOR SWORD PLATE GUIDES IN MINING INSTALLATION

Alois Hauschopp, Werne an der Lippe; Bernd Steinkuhl, Lunen; Oswald Breuer, Dortmund-Husen, and Berthold Ostrop, Selm, all of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

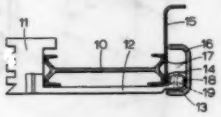
Filed Feb. 29, 1972, Ser. No. 230,217

Claims priority, application Germany, Mar. 9, 1971, P 21 11 225.4

Int. Cl. E21c *27/35*

U.S. Cl. 299—34 **2 Claims**

A mineral mining installation composed of a mineral winning machine such as a plough guided for movement along a conveyor. The plough has a sword plate extending beneath the conveyor and guided at the side of the conveyor remote from the machine. This guidance is provided by guide members attached to the sword plate and secured to a drive chain used for moving the plough. Guard plates are attached to the side of the conveyor remote from the machine and U-shaped cover plates are in turn affixed to the guard plates with the aid of screws and spacers. The guide members and drive chain run



in a guide channel defined between the guard plates and cover plates and beneath the spacers. Each guide member is elongate and has a transversely-extending recess in its upper face. A roller or wear resistant insert is accommodated in the recess and seats on a spigot therein. Wear-resistant pads are also attached to the guide members. As the sword plate tilts the periphery of the roller or a wear-resistant pad attached to the inner face of the insert is allowed to engage on the guard plates.

3,768,867

METHOD OF AND AN APPARATUS FOR PNEUMATICALLY CONVEYING FEEDSTOCK

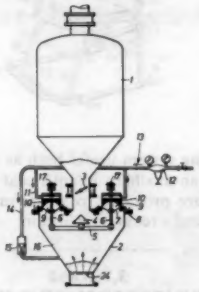
Wolfang Krambrock, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 26, 1970, Ser. No. 14,476

Claims priority, application Germany, Mar. 13, 1969, P 19 12 733.4

Int. Cl. B65g *53/36*

U.S. Cl. 302—53 **10 Claims**



Feedstock is conveyed from a supply vessel under constant delivery pressure and in constant quantities while the feedstock is fed through a closure member, wherein an adjustable loading pressure is allowed to act on the closure force of the closure member, the loading pressure being governed by the delivery pressure and is high in relation to the weight of the column of feedstock resting on the closure member.

3,768,868

HYDRAULIC BRAKE SYSTEM

Akiyoshi Hirai, and Hiroshi Kawaguchi, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo K.K.

Filed Oct. 22, 1971, Ser. No. 191,750

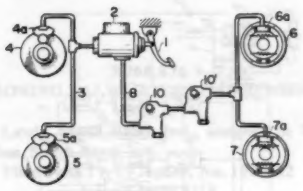
Claims priority, application Japan, Oct. 23, 1970, 45/92774

Int. Cl. B60t *11/34*

U.S. Cl. 303—6 C **10 Claims**

A hydraulic brake system including a master cylinder and separate circuits between the master cylinder and the wheel

cylinders for the front wheels and for the rear wheels with at least two valves arranged in series in the circuit between the master cylinder and the wheel cylinders for the rear wheels. The pressure regulating valves are proportioning valves each having a valve portion to which the output hydraulic pressure from the valve acts in opposition to the sum of the input hydraulic pressure to the valve and a spring force for producing an output hydraulic pressure having a reduced rate of increase relative to the rate of increase of the input hydraulic pressure after a predetermined level of input hydraulic pressure has been reached. Alternatively, the pressure regulating valves can be provided by a proportioning valve and a limiting valve. The limiting valve has a valve portion to which the sum of its output hydraulic pressure and a spring force is applied in opposition to an input hydraulic pressure for producing a constant output hydraulic pressure after the input hydraulic pressure exceeds a predetermined value.

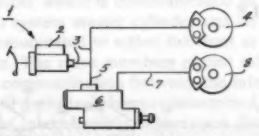


3,768,869

CONTROL VALVE AND SYSTEM

Richard C. Bueler, Des Peres, and Edward J. Falk, St. Louis, both of Mo., assignors to Wagner Electric Corporation, Newark, N.J.

Filed May 8, 1972, Ser. No. 250,948
Int. Cl. B60t *13/00*
U.S. Cl. 303—6 C **17 Claims**



A control valve is provided with a pair of modulating valves in parallel flow relation, and each of such modulating valves are generally operable to interrupt the parallel flow relation upon the modulating operation of the other thereof to effect a reduced application through said control valve of fluid pressure supplied thereto.

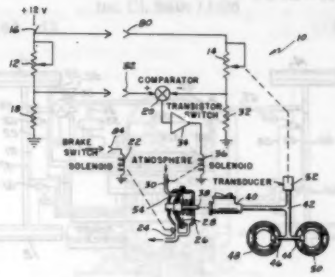
3,768,870

ELECTRICALLY ACTUATED TRAILER BRAKE CONTROL SYSTEM

Donald W. Howard, 401 N. Bendix Drive, South Bend, Ind.

Filed Mar. 15, 1972, Ser. No. 234,746
Int. Cl. B60t *13/68*
U.S. Cl. 303—7 **5 Claims**

Upon applying the brakes of a pulling vehicle, an electrical signal is used to actuate the trailer brakes. After applying the brakes of the pulling vehicle and the trailer, an electrical control system is used to control the trailer brakes hydraulic pressure as a function of the pulling vehicle's brake line pressure. As a pressure differential is detected between the pulling vehicle and the trailer, the electrical system decreases the trailer brake pressure until the differential no longer exists. The intelligence used to control the trailer brake hydraulic pressure is obtained from a pressure transducer in the brake line of the pulling vehicle, from a pressure transducer in the brake line of the trailer, and from the brake switch of the pulling vehicle. By inclusion of a proper feedback in the electrical control system, the pressure in the brake line of the trailer will not be changed by minor variations.

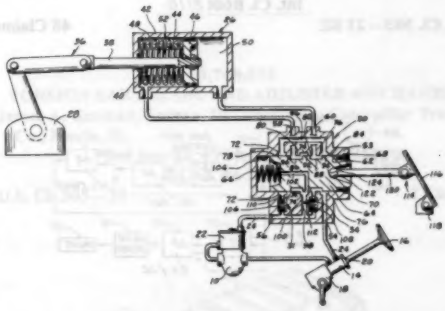


3,768,871

VEHICLE HYDRAULIC BRAKE SYSTEM

Robert E. Meyers, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ill.

Filed May 22, 1972, Ser. No. 255,705
Int. Cl. B60t *15/04, 13/12*
U.S. Cl. 303—9 **10 Claims**

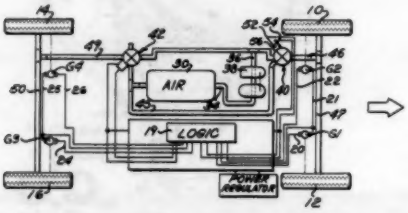


A vehicle hydraulic system having a power steering gear and a control valve for the steering gear connected in series flow relationship between a pump discharge port and a fluid reservoir. A brake system having first valve means interconnected in the hydraulic return line downstream of the control valve between the control valve outlet and the reservoir for controlling communication to a brake actuating device which includes a piston slidably received in a bore so as to have a brake release position and a brake applied position in the bore and being urged to its brake release position by a predetermined back pressure supply and to its brake applied position by spring means which may be augmented by the predetermined pressure. A second valve means is located in the return line downstream of the control valve outlet port for establishing the predetermined back pressure supply.

3,768,872
SKID CONTROL SYSTEM

John A. Urban, Livonia, and Joseph H. McNinch, Jr., Oak Park, both of Mich., assignors to Eaton, Yale & Towne, Inc., Cleveland, Ohio

Filed Mar. 17, 1971, Ser. No. 125,291
Int. Cl. B60t 8/10
U.S. Cl. 303—21 BE 6 Claims

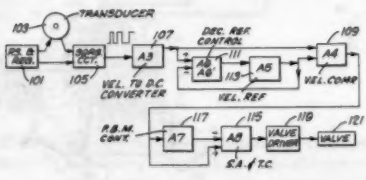


A compound anti-skid logic system in which a plurality of different logic circuits are operative in parallel to process input signals from a common source in accordance with the different logic of each circuit with the different circuits complementing each other so that at least one logic circuit detects a wheel lock or an impending wheel lock under widely variable road conditions and brake application pressures. The compound system is incorporated in a master module with additional slave modules used with the master module to control axles in addition to the axle controlled by the master module.

3,768,873
BRAKE CONTROL SYSTEM

Edgar A. Hirzel, Granada Hills, Calif., assignor to Crane Company, Chicago, Ill.

Continuation of Ser. No. 871,439, Oct. 22, 1969, abandoned, which is a continuation-in-part of Ser. No. 665,072, Sept. 1, 1967, abandoned. This application June 23, 1971, Ser. No. 155,903
Int. Cl. B60t 8/10
U.S. Cl. 303—21 BE 48 Claims

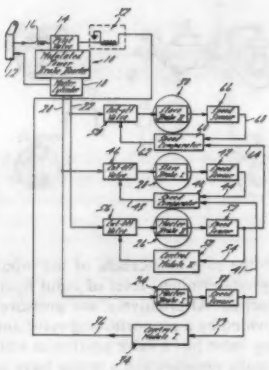


A brake control system for a vehicle having a number of wheels with brake application device is provided with a slip error signal that is used to modify brake application means. The slip error signal is produced by comparing an instantaneous wheel speed signal to a simulated vehicle variable reference signal. The simulated vehicle variable reference signal is produced by a simulator supplied with wheel speed information obtained solely from one wheel to avoid error inducing introduction of wheel speed information from other wheels. An initial simulated vehicle variable reference signal is derived from maximum wheel speed attained during wheel acceleration. The simulated vehicle variable reference signal representing the speed of the vehicle during deceleration is produced by modifying the variable reference signal with a value including a force-analog signal representing the drag forces on the vehicle.

3,768,874
FOUR WHEEL SKID CONTROL SYSTEM

Hugh E. Riordan, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Continuation of Ser. No. 859,773, Sept. 22, 1969, abandoned. This application Apr. 5, 1972, Ser. No. 182,188
Int. Cl. B60t 8/08
U.S. Cl. 303—21 BE 20 Claims

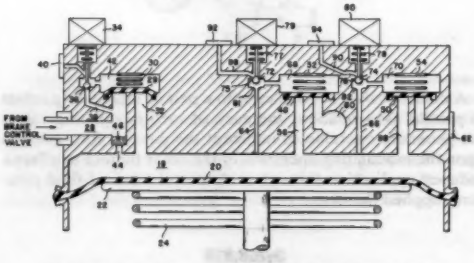


A four wheel skid control system in which the operation of a first wheel through skid control apparatus controls the basic brake pressure and a second wheel, during skid control, utilizes the controlled basic brake pressure to maintain maximum retarding force while a third wheel utilizes the controlled basic brake pressure and follows the speed of the first wheel and a fourth wheel utilizes the controlled basic brake pressure and follows the speed of the second wheel.

3,768,875
ADAPTIVE CONTROL FOR FLUID PRESSURE BRAKING SYSTEM

Dennis J. Davis; Dennis J. Sudnick; John E. Juhasz, and Sham Kurichh, all of Elyria, Ohio, assignors to The Bendix Corporation, South Bend, Ind.

Division of Ser. No. 75,314, Sept. 25, 1970, Pat. No. 3,667,609. This application May 8, 1972, Ser. No. 251,530
Int. Cl. B60t 8/00
U.S. Cl. 303—21 F 5 Claims



An adaptive fluid pressure braking system responsive to wheel deceleration and acceleration for cyclicly decreasing and increasing braking effort at optimum levels to prevent wheel lock-up and provide maximum deceleration. The system includes band control means responsive to a pair of pre-selected wheel acceleration levels whereby, instead of taking corrective action as soon as sensed, whenever wheel ac-

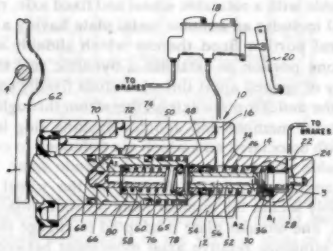
celeration during a preceding cycle is less than the lower level or greater than the upper level, a signal is generated whereby corrective action is taken during the next cycle. Where maximum wheel acceleration falls between the pre-selected levels no corrective action signal is generated for the next cycle. The corrective action may comprise a greater rate of decrease in braking pressure during the next cycle or a lesser rate of decrease in pressure.

3,768,876

PROPORTIONING VALVE WITH LOAD SENSING BLEND BACK

Richard L. Lewis, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed June 11, 1971, Ser. No. 152,322
Int. Cl. B60t *8/18*
U.S. Cl. 303—22 R **11 Claims**



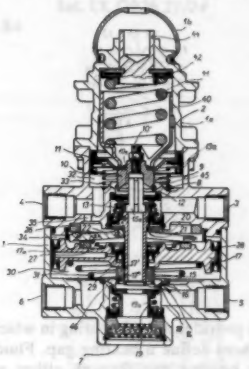
A control device is disclosed for use in a vehicle hydraulic braking system which proportions the braking effort between the front wheels of the vehicle and the rear wheels. The control device includes a housing defining a bore therewithin, and a pair of valve members within the bore dividing the latter into an inlet chamber which is communicated to one side of the vehicle's split system master cylinder and an outlet chamber which is communicated to either the front or the rear brakes of the vehicle. The valve members permit substantially uninhibited fluid communication between the inlet and the outlet chambers until a relatively low predetermined pressure level is attained in the inlet chamber, whereupon the valve members begin proportioning flow of fluid between the inlet and outlet chambers to establish a lower fluid pressure level in the outlet chamber than the fluid pressure level established in the inlet chamber. A piston is provided within the bore so that when a predetermined pressure level in the inlet chamber is attained, the piston overcomes the force of a spring to move into operative engagement with the one valve member. After this occurs, the pressure level in the outlet chamber will increase more rapidly than the pressure level in the inlet chamber is increased, until the pressure level in the outlet chamber is again substantially equal to the pressure level in the inlet chamber whereupon substantially uninhibited fluid communication is again permitted between the inlet and outlet chambers. The piston is also operably connected to sensing means which reflects the relative position between the axle of the vehicle and the body of the vehicle, so that the piston is moved away from the valve member as the load carried by the vehicle increases. Therefore, a proportionally greater fluid pressure level in the inlet chamber will be required for a heavy loaded vehicle before the piston engages the one valve member.

3,768,877

CONTROL APPARATUS FOR TWO POWER BRAKES

Manfred Siebold, Boeblingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 12, 1971, Ser. No. 114,938
Claims priority, application Germany, Feb. 26, 1970, P 20 8 894.2
Int. Cl. B60t *15/06*
U.S. Cl. 303—52 **10 Claims**



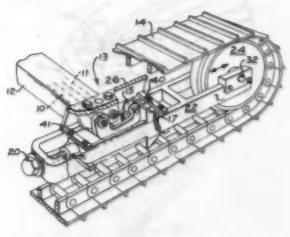
Two power brakes are controlled by sequentially operative first and second valves which connect, when the first valve is actuated by an operator-influenced reaction member, high pressure air to the brakes. A stem connects the reaction member with lost motion to the second valve to operate the same when the first brake fails, and levers connect a piston of the second valve with the reaction member to indicate to the operator that the second brake operates.

3,768,878

TORSION BAR RECOIL AND ADJUSTER MECHANISM

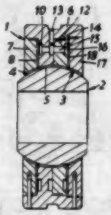
James A. Garman, Eureka, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 21, 1972, Ser. No. 219,755
Int. Cl. B62d *55/30*
U.S. Cl. 305—31 **7 Claims**



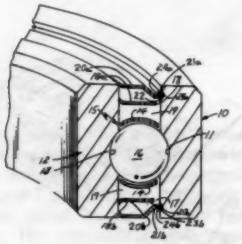
A torsion bar recoil and adjuster mechanism for the track of a crawler-type vehicle. The mechanism includes a pair of spaced-apart, parallel torsion bars connected to an idler wheel carrying yoke member. Means are provided for the selective adjustment of the tension provided in said track as well as for absorbing recoil forces in said track.

3,768,879
SPHERICAL BEARING
Colin William Dee, Dorset, England, assignor to The Horst-Mann Gear Company Limited, Bath, England
Filed Feb. 28, 1972, Ser. No. 230,010
Claims priority, application Great Britain, Feb. 2, 1971, 5,783/71
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 7 Claims



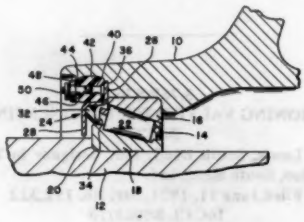
The invention provides a fluid bearing in which part-spherical bearing surfaces define a bearing gap. Fluid is fed under pressure to the bearing gap through either a full circumferential slot, or a plurality of discrete slots arranged in a circumferential row. By selection of inter alia a certain range of angles, at which the slot or slots are positioned, in relation to the angles subtended by the axial ends of the bearing gap, the performance of the bearing becomes substantially independent of physical characteristics of the fluid and load capacity is determined substantially by bearing geometry and the pressure of the applied fluid.

3,768,880
BALL BEARING DEVICE WITH BARRIER SEAL
Wesley C. Howe, 2910 Stearns Hill Rd., Waltham, Mass.
Filed Aug. 27, 1971, Ser. No. 175,537
Int. Cl. F16c *33/78*
U.S. Cl. 308—187.2 8 Claims



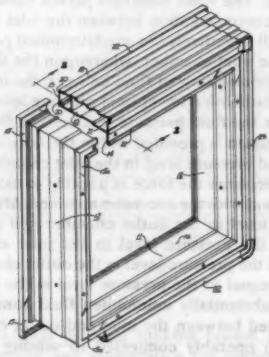
A ball bearing device has a substantially frictionless, barrier seal between a cage with ball bearings and an outer shield. Said seal extends around the outer surface of the inner raceway and in close contact therewith and is normally spaced from said cage and also from the inner surface of the outer raceway and from said outer shield, and said outer shield is spaced from the outer surface of the inner raceway.

3,768,881
WHEEL BEARING SEAL
John R. Bender, and Peter Brooks, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.
Filed Oct. 2, 1972, Ser. No. 294,137
Int. Cl. F16c *33/78*
U.S. Cl. 308—187.2 6 Claims



A grease retaining and/or dirt excluding seal for an annular bearing having annular inner (cone) and outer (cup) portions engageable with a rotatable wheel and fixed axle, respectively. The seal includes an annular metal plate having a flexible annular seal portion fixed thereto which slidably engages the fixed cone portion to establish a dynamic seal therewith. A plurality of spaced apart threaded studs fixedly secured at on end to the annular plate extend therefrom through a deformable annular member and annular backing ring into engagement with associated nuts which are tightened to compress the deformable annular member and extrude same into an adjacent annular depression formed in the wheel to thereby removably secure the annular plate position adjacent the cup portion. The annular plate is adapted to engage the cone portion to minimize relative axial movement between the cone and cup upon axial withdrawal of the wheel from the axle thereby maintaining the annular seal portion in sealing engagement with the cone portion.

3,768,882
DETACHABLE COLLAR FOR SURFACE-MOUNTED WALL CABINET
Ernest F. Ohlhauser, and Alvin J. Piller, both of Cincinnati, Ohio, assignors to The Celotex Corporation, Tampa, Fla.
Filed Nov. 26, 1971, Ser. No. 202,178
Int. Cl. A47b *67/02*
U.S. Cl. 312—242 6 Claims



The application discloses an improved collar assembly, by the use of which a recessed type rectangular cabinet may be adapted to surface mounted installation. The collar consists of two or more collar pieces formed from a semi-rigid collar strip

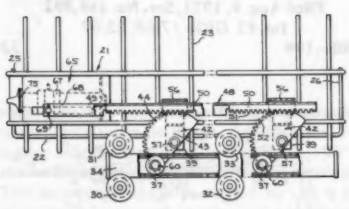
of special configuration, and is characterized by the fact that each collar piece is of rectangular form at its ends, and the corners are preformed intermediate the ends, and are seamless. The collar may consist of four segments, each having a preformed seamless corner, or two of which have two preformed seamless corners each, the remaining two pieces being straight; or it may consist of two segments, each having two preformed seamless corners, each piece constituting one half of the complete collar. The collar pieces are attached to the cabinet in various ways, preferably by a snap-in construction.

3,768,883

RACK LEVEL ADJUSTMENT SYSTEM IN A DISHWASHER

Melvin R. Kauffman, Louisville, Ky., assignor to General Electric Company, Lousiville, Ky.

Filed Dec. 27, 1971, Ser. No. 212,233
Int. Cl. A47b *88/00*
U.S. Cl. 312—351 **8 Claims**



A dish supporting rack is mounted within the wash chamber of a dishwashing machine by connecting means permitting selective manual adjustment of the vertical level of the rack side. The connecting means includes a pair of spaced apart pivotal sectors, preferably formed from a durable plastic, linked to a manual control means at the front corner of the rack such that manipulation of the control means is translated to the sectors whereby the sectors pivot to vary the level of the rack side. Linkage between the control means and the sectors includes an elongated rod that may be formed as a toothed rack wherein plastic tooth sections are retained in a metal channel body portion. The manual control means has visual indicating means in combination therewith whereby the machine operator can ascertain the disposition of the rack side relative to the normal or intermediate level of adjustment.

3,768,884

GETTERING

Paolo della Porta, and Elio Rabusin, both of Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy

Division of Ser. No. 34,319, May 4, 1970, Pat. No. 3,669,567.
This application Feb. 1, 1972, Ser. No. 222,510
Int. Cl. H01j *9/38*
U.S. Cl. 316—25 **10 Claims**

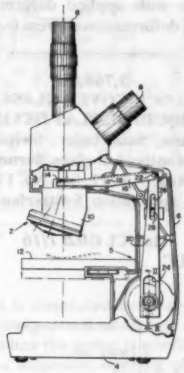
A getter device comprising an evaporable getter metal and first and second sources of gas; means for releasing the gas from the first source prior to and preferably also during evaporation of the getter metal; and means for releasing the gas from the second source during the latter part of the period of getter metal evaporation.

3,768,885

MICROSCOPE FOCUS ADJUSTMENT MECHANISM

Olin W. Boughton, Williamsville, and August R. Von Langen, Tonawanda, both of N.Y., assignors to American Optical Corporation, Cambridge, Mass.

Filed May 12, 1972, Ser. No. 252,888
Int. Cl. G02b *21/24*
U.S. Cl. 350—84 **5 Claims**



A microscope nosepiece coarse and fine adjustment mechanism. The nosepiece rests on a rocker arm which is swung up or down by a connecting rod which in turn is controlled by a disc cam. The cam is rotatable directly for coarse adjustment and by a reduction gear train for fine adjustment.

3,768,886

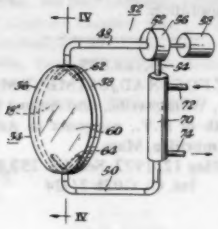
VARIABLE COLOR DISPLAY DEVICE AND PROJECTION MEANS THEREFOR

Edward N. Sharpless, Pitcairn, Pa., assignor to Liquid Crystal Industries, Inc., Turtle Creek, Pa.

Filed May 27, 1970, Ser. No. 40,889
Int. Cl. G02f *1/28*
U.S. Cl. 350—160 LC **12 Claims**

A display device for presenting a visual indication of pressure, said device comprising a support capable of supporting a

layer of liquid crystalline material thereon, said material having a characteristic of selective light scattering which is variable in accordance with applied deformational stress, and means for applying deformational stress to said material.



3,768,887

WATCH OR CLOCK COVER GLASS INCLUDING A LIQUID DISPLAY DEVICE

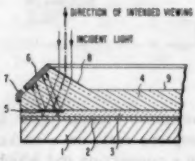
Hubert F. Portmann, Saint-Imier, Switzerland, assignor to Compagnie des Montres Longines, Berne, Switzerland

Filed Aug. 9, 1971, Ser. No. 170,096

Claims priority, application Switzerland, Sept. 16, 1970, 13708/70

Int. Cl. G02f 1/16

U.S. Cl. 350—160 LC **10 Claims**



A watch or clock cover glass including a liquid crystal and having a rear electrode acting as a mirror, characterised by a surface absorbing light, so disposed that it permits observation of the display zone, the incident light around the display zone being directed onto the said surface by means of at least one inclined optical surface.

3,768,888

OPTICAL LOW PASS FILTER

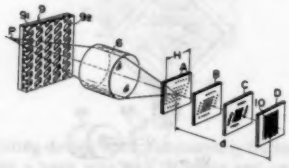
Hisashi Nishino; Teruo Hosokawa, and Ikuo Hioki, all of Osaka, Japan, assignors to Minolta Comera K. K., Osaka-fu, Japan

Filed July 21, 1971, Ser. No. 164,757

Claims priority, application Japan, July 28, 1970, 45/65418

Int. Cl. G02b 27/38

U.S. Cl. 350—162 SF **5 Claims**



An optical low-pass filter so formed that a rectangular wave phase grating including a plurality of sets of laminae for introducing phase retardation, in which laminae in each set being arranged in parallel with each other and the laminae of different sets being arranged to cross with an angle to each other is inserted in an optical system of the type having a color-encoding filter means disposed in the light path of the optical system for, such as, a single tube color television camera, and high frequency components of an objective image on the color-encoding filter means are attenuated less than a predetermined level, to the image focused on the color-encoding filter means, a degree of blur always larger than the value calculated from the grating period of the color-encoding filter means is given and another image focused on a position distant from said image as far as a predetermined distance brings about no interference to produce another color striped pattern with said color-encoding filter means, regardless of *f*-number of the objective lens and the diaphragm value so as to remove the influence effected by interference between the luminance and chrominance signal.

3,768,889

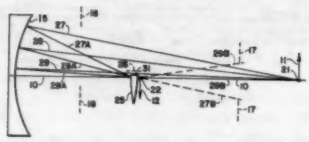
OPTICAL SYSTEM HAVING DIVERTING MEANS

Arthur Cox, Park Ridge, Ill., assignor to The Austin Company, Cleveland, Ohio

Filed Aug. 4, 1971, Ser. No. 168,892

Int. Cl. G02b 17/08, 23/02

U.S. Cl. 350—199 **33 Claims**



A Schmidt type reflector system is disclosed which is suitable to transfer information which is contained on one side of an optical axis. The invention allows access to the image without substantial loss of light due to diagonal mirrors or beam splitters used in the prior art. The system is able to operate under variable pupil conditions with a resolution approaching a diffraction limited system.

3,768,890

INTERNAL FOCUSING WIDE ANGLE EYEPIECE

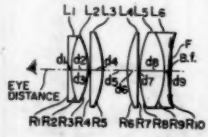
Kiyoyasu Osawa, Tokyo, and Mutsuhiko Matsuura, Yokohama, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed June 12, 1972, Ser. No. 262,102

Claims priority, application Japan, June 12, 1971, 46/41410; June 12, 1971, 46/41411

Int. Cl. G02b 25/00

U.S. Cl. 350—220 **3 Claims**



A wide angle eyepiece for an internal focusing optical system of a viewing instrument comprises six elements. As viewed axially from rear to front, the eyepiece includes a biconvex doublet eyelens having a negative meniscus element and a biconvex element cemented together, a first positive meniscus single lens concaved toward the eye, a second positive meniscus single lens convexed toward the eye, and a posi-

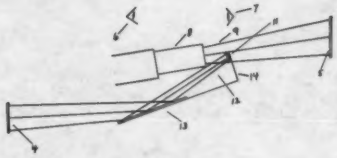
tive meniscus doublet field lens having a biconvex element and a biconcave element cemented together. The field lens and at least one of the single lenses are axially movable together for focusing.

3,768,891

AN OPTICAL SYSTEM FOR ATTACHMENT TO A PROJECTOR TO REPRODUCE A SECONDARY IMAGE

Herman Centner, 8730 S. W. 21st Terrace, Miami, Fla.

Filed Mar. 27, 1972, Ser. No. 238,276
Int. Cl. A61b *3/02*; G03b *21/26*, *21/28*
U.S. Cl. 351—30 1 Claim



An optical system for use in reproducing a secondary image simultaneously with the main image of a projector. The secondary image is beamed in a direction which is 180° from the path of the beam of light from the projector causing the main image. The secondary image is caused by (a) a mirror arranged in the main beam path to intercept a component of the light, and by converging it to reduce the size of the secondary image and shorten the focal length of the image of the rays forming the secondary image, and (b) a second mirror in the reflected beam to direct the reflected beam onto a screen. Thus, the main beam can be utilized to project the main image to be viewed by a person whose eyes are being tested, while the eye examiner may sit facing the patient to adjust various lenses before his eyes and see the secondary image in front of him which is the same as that which the patient sees.

3,768,892

EYEGLASSES WITH COUNTERBALANCED TEMPLE PIECES

William T. Bidgood, 7 Pine Circle, N.E., Apt. E, Atlanta, Ga.

Filed Mar. 6, 1972, Ser. No. 232,024
Int. Cl. G02c *11/00*
U.S. Cl. 351—158 3 Claims

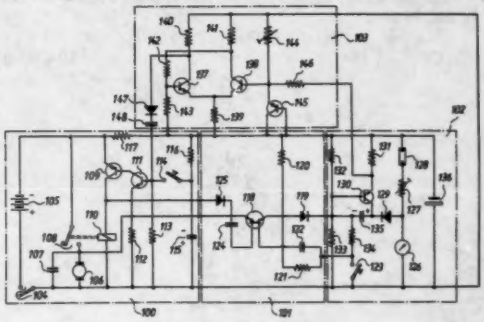
A pair of eyeglasses having a pair of lenses, a frame for the lenses, nose pieces disposed between the lenses and adapted to engage the bridge of the nose of a wearer, and a pair of temple pieces extending rearwardly over the ears of a wearer and terminating in a pair of hook members, the hook members being weighted to counterbalance the weight of the lenses and the frame to relieve the nose of the weight and to maintain the lenses in their proper position.

3,768,893

AUTOMATIC DIAPHRAGM CONTROL CIRCUIT FOR A MOTION PICTURE CAMERA

Helmut Mayr, Taufkirchen; Theodor Huber, and Richard Pelte, both of Munchen, all of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Germany

Filed Sept. 25, 1972, Ser. No. 291,606
Claims priority, application Germany, Sept. 24, 1971, P 21 47 679.9
Int. Cl. G03b *21/36*
U.S. Cl. 352—91 17 Claims



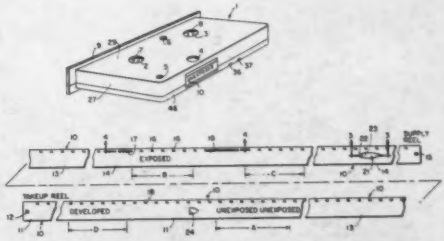
A bistable circuit is connected between the film transport motor and the diaphragm control circuit and causes a rapid diaphragm closing when the motor is standing still. Activation of the motor causes automatic opening of the diaphragm to the correct position determined by ambient light conditions. The diaphragm is closed at a slower rate when the diaphragm control switch is activated when the motor is running. A circuit for automatically stopping the motor when the aperture is closed is also provided.

3,768,894

PHOTOGRAPHIC CASSETTE CONTAINING FILM STRIP PROGRAMMED FOR MANUAL AND AUTOMATIC OPERATION AND FILM PROCESSOR THEREFOR

Gerald H. Cook, Lynnfield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 12, 1972, Ser. No. 262,045
Int. Cl. G03c *11/00*
U.S. Cl. 352—130 17 Claims



A photographic cassette containing a strip of film and a film processor comprising a supply of processing composition and a device for applying the composition to the film. The film is formed with actuating elements cooperating with the film processor, with a camera, and with a film drive and projection system to advance the film for exposure, process the exposed film, project the processed film, and rewind the film for storage. Visible indicia on the film are sequentially exposed in

a film gate formed in the cassette and cooperate with the actuating elements to inform the operator of the current status of the film in the cassette before it is placed in the camera, after it is removed from the camera, and after it is removed from the film drive and projection system.

3,768,895

CINEMATOGRAPHIC APPARATUS

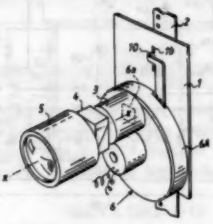
Hubert Steppi, Garching, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 23, 1972, Ser. No. 265,776

Claims priority, application Germany, Sept. 17, 1971, P 21 46 526.9

Int. Cl. G03b *1/22, 19/18*

U.S. Cl. 352—166 **10 Claims**



A motion picture camera or projector wherein the rotor of an electric motor constitutes the shutter. The motor has a flat housing a portion of which is located between the picture taking lens and the light-admitting opening of a film guide and has a second opening which admits scene light from the lens to the opening of the guide or vice versa in predetermined angular positions of the shutter. The shutter is rigid with a cam which actuates the claw pull-down.

3,768,896

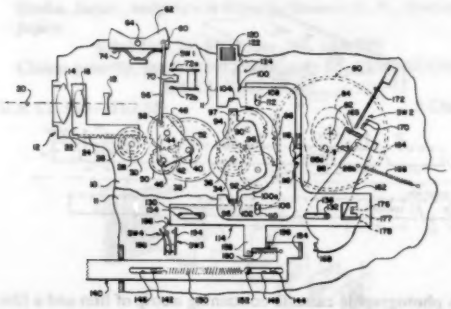
MOTION PICTURE CAMERA DRIVE MECHANISM

Gerald L. Jenkins; Vernon H. Jungjohann; Edgar S. Marvin, all of Rochester, and Neil G. Seely, Brockport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 168,221, Aug. 2, 1971, Pat. No. 3,724,937. This application Sept. 15, 1972, Ser. No. 289,516

Int. Cl. G03b *1/00*

U.S. Cl. 352—174 **3 Claims**



A motion picture camera drive mechanism includes a single motor which is used for driving (separately or simultaneously) a film pull down mechanism which advances film past an exposure aperture and a mechanism for adjusting at least one lens element in a zoom lens system. When the camera drive mechanism is to be energized, provision is made for first energizing a circuit to an automatic exposure control system and then operating the film pull down mechanism, thereby effecting correct exposure of the first frame of film.

3,768,897

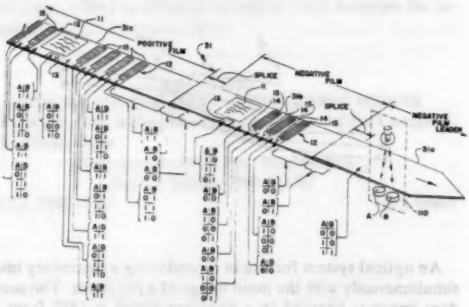
POSITIVE-NEGATIVE MICROFILM FILM READER

Wayne Spani, San Diego, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 28, 1971, Ser. No. 166,917

Int. Cl. G03b *23/12*

U.S. Cl. 353—26 **5 Claims**



Apparatus is disclosed for retrieving a particular microfilm document image from a plurality of document images recorded on a strip of film which may have positive and negative portions with each such portion having a plurality of document images and an identifying code field for each document image. The apparatus includes polarity indication means which determines whether a film portion is positive or negative and produces a control signal indicative of the polarity thereof and a code field decoder responsive to the control signal for decoding recorded code fields, whether recorded on positive or negative film portions, to retrieve the particular document image.

3,768,898

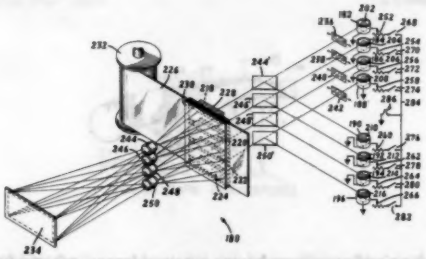
CONTINUOUSLY-VARIABLE, SOLID-ANGLE FILTER

Edward F. Yost, Jr., Northport, N.Y., assignor to Spectral Data Corp., Hauppauge, N.Y.

Continuation-in-part of Ser. No. 627,539, March 31, 1967, abandoned. This application Oct. 29, 1969, Ser. No. 871,481

Int. Cl. G03b *33/06, 21/00*

U.S. Cl. 353—31 **1 Claim**



A pair of coaxially mounted, cylindrical, neutral-density filter members geared together for counterrotation, one member being of linearly increasing density clockwise and the other member being of linearly decreasing density clockwise.

An arrangement similar to (1) in which parallel linear filter members replace the coaxial cylindrical filter members.

A rheostat-controlled light source, a slit mask, a pair of movable beds, gears for driving the beds past the slit at prescribed speeds, and a pair of light-sensitvve film strips respectively mounted on the beds for making the filter members.

An arrangement of the filter members in a spectral zonal color reconnaissance viewer.

3,768,899

MULTIPLE SLIDE PROJECTOR

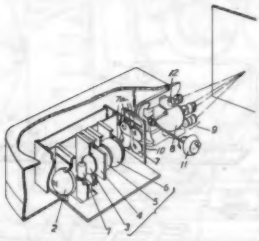
Luis Antonio Adiego De La Parra, Madrid, Spain, assignor to Empresa Nacional De Optica, S.A., Madrid, Spain

Filed May 4, 1970, Ser. No. 34,252

Claims priority, application Spain, Jan. 15, 1970, 375,479

Int. Cl. G03b *23/00, 21/14*

U.S. Cl. 353—82 **2 Claims**



A projector of multiple slides having a light-tight casing with a projector therein. A light source produces a light beam and a condenser system divides the light beam into a plurality of partial beams corresponding to the number of desired photograms. A slide carrier mounts a slide having a plurality of photograms or images. A shutter with means for activating the shutter manually or automatically interrupts the light beams coming from the photograms in a predetermined sequence. Multiple objectives are arranged to correspond to the photograms of the slides so that one objective corresponds to each photogram.

3,768,900

SLIDE PROJECTORS

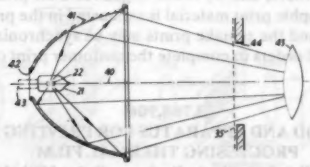
William James McLintic, London, England, assignor to Thorn Lighting Limited, London, England

Filed Dec. 16, 1970, Ser. No. 98,710

Claims priority, application Great Britain, Dec. 17, 1969, 61,558/69

Int. Cl. G03b *21/28*

U.S. Cl. 353—98 **4 Claims**



A bowl reflector of modified ellipsoidal shape is suitable for a slide projector, eliminates the need for a condenser and, when used with a flat-coil type filament lamp, enables a substantially uniform light distribution to be obtained. The regions of an ellipsoidal reflector responsible for imaging the cool, dark ends of the filament are effectively omitted from the present reflector.

3,768,901

DEVICE FOR PICKING UP SLIDES

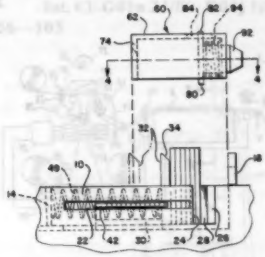
Wolfgang Ort, Stuttgart-Wangen, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 1, 1971, Ser. No. 158,760

Claims priority, application Germany, Aug. 14, 1970, G 70 30 517.8

Int. Cl. G03b *23/02*; B65g *1/16*

U.S. Cl. 353—103 **6 Claims**



A slide projector includes a storage area for receiving slides aligned to form a stack. A movable pressure pad is urged toward a received slide stack to clamp the stack in the storage area between the pressure pad and wall means at oe end of the sotrage area. A removable device for picking up the stack of slides from the storage area includes a bracket member which defines a recess into which the slides are received when the device is moved onto the projector. At that time, cooperation between a cam surface on the device and the pressure pad moves the pressure pad away from the slide stack to release the clamping pressure on the stack. At that time, a clamp in the deivce is released from a restrained position to resiliently hold the slides in the recess of the bracket member so that the slide stack may be removed from the storage area with the device.

3,768,902

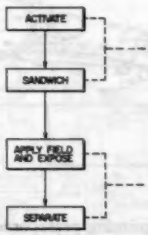
MANIFOLD IMAGING

Warren G. Van Dorn, 300 Northridge Rd., Columbus, Ohio

Division of Ser. No. 708,380, Feb. 26, 1968, Pat. No. 3,707,368, which is a continuation-in-part of Ser. No. 452,641, May 3, 1965, abandoned. This application Dec. 20, 1971, Ser. No. 210,285

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 **10 Claims**

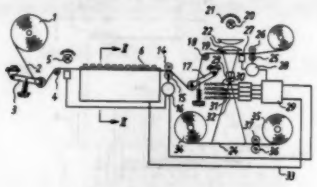


A Manifold imaging system wherein a cohesively weak photoresponsive imaging layer is sandwiched between two sheets. The imaging layer is exposed to a pattern of actinic electromagnetic radiation and an electric field providing upon separation of the sheets a positive image on one sheet and a negative image on the other.

3,768,903
PHOTOGRAPHIC COPYING APPARATUS WITH ILLUMINATION CORRECTION MEANS

Siegfried Steinberger, Munich; Erich Nagel, Anzing, and Werner Von Stein, Hamburg, all of Germany, assignors to Afga-Gevaert AG, Leverkusen, Germany

Filed Sept. 15, 1971, Ser. No. 180,656
Claims priority, application Germany, Sept. 18, 1970, P 20 46 104.5
Int. Cl. G03b 27/78
U.S. Cl. 355—38 **20 Claims**

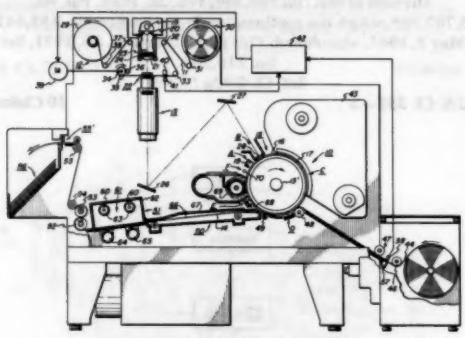


A photographic copier in which originals copied at a copying station are first examined to determine the type of corrections to be applied to the illuminating source used in copying the original. The corrections are applied by operating personnel at an examining station in front of the copying station. A transport unit with buffer moves the originals from the examining station to the copying station. An information memory stores the corrections to be applied to the originals, until the respective original arrives at the copying station and is in position to be copied.

3,768,904
PRINTING APPARATUS INCLUDING REGISTRATION CONTROL

Victor Rodek, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 17, 1972, Ser. No. 254,131
Int. Cl. G03b 27/52
U.S. Cl. 355—40 **6 Claims**

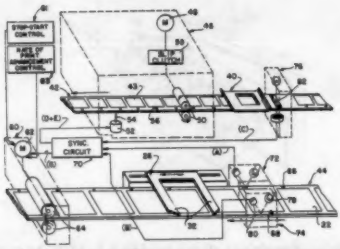


Apparatus for printing prerecorded information provided on a filmstrip. The prerecorded information is printed on a web in registration with pre-printed information thereon. The filmstrip is driven at a controllable velocity, whereas the web is driven at a constant velocity. Sensing mechanisms are provided to sense the respective web and filmstrip velocities and to generate signals indicative thereof. A comparison mechanism is provided to receive the velocity signals and compare the phase relationship therebetween. A delay mechanism is provided to delay for a predetermined interval, the transmission of the signal indicative of the web velocity to the comparison mechanism. A mechanism is coupled to the comparison mechanism for receiving a signal from the comparison mechanism indicative of the phase relationship of the velocity signals and being further operable to vary the velocity of the filmstrip so that a predetermined phase relationship is established for the signals. A predetermined velocity relationship is thus established between the filmstrip and web.

3,768,905
METHOD AND APPARATUS FOR INSPECTION OF PHOTOGRAPHIC PRINTS

Raymond Joseph Williams, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 15, 1972, Ser. No. 234,751
Int. Cl. G03b 27/32
U.S. Cl. 355—77 **25 Claims**



Print inspection and reprint apparatus for cooperation with a photographic printer wherein negatives in a roll of spliced film orders are advanced stepwise into the exposure station of the photographic printer in synchronization with the continuous advancement of finished photographic prints on a print roll through a print inspection station. The operator of the inspection apparatus inspects the prints as they advance continuously through the print inspection station, halts the advancement of unacceptable prints in the print inspection station, marks such unacceptable prints and reprints, with appropriate exposure correction, the corresponding negative located in the exposure station of the photographic printer. The prints continuously move through the inspection station at a variable, operator controlled speed. The stepwise negative advancement synchronized to the continuous advancement of the prints is controlled by a circuit responsive to print marks and order separation marks on the prints and splices attaching ends of successive negative filmstrips. Synchronization is maintained under conditions including: 1) full orders of prints and negatives; 2) two prints per negative; 3) fewer prints than negatives in a single order; 4) fewer prints than negatives in successive orders; and 5) fewer negatives than prints. When the photographic print material is exhausted in the printer, it is developed, and the remake prints may be synchronized to the original print orders to complete the customer print orders.

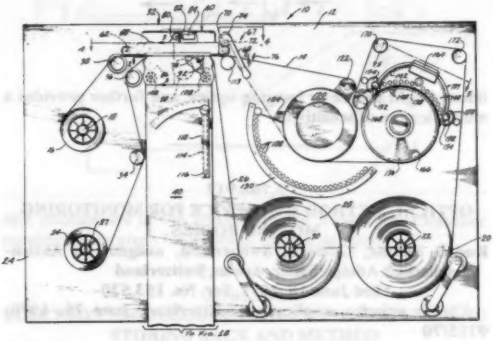
3,768,906
METHOD AND APPARATUS FOR PRINTING AND PROCESSING THERMAL FILM

Gunnar P. Michelson, Santa Barbara; Gajus Michelson, Sherman Oaks; Wolf Michelson, Van Nuys, and William W. Valliant, Los Angeles, all of Calif., assignors to Producers Service Corporation, Glendale, Calif.

Filed Dec. 27, 1971, Ser. No. 212,236
Int. Cl. G03b 27/02
U.S. Cl. 355—132 **9 Claims**

A film printer and processor transfers images from a master film onto an unexposed thermal or "vesicular" film. The two film strips overlap as they pass through a housing where they

are exposed to ultravoilet light which irradiates the vesicular film to decompose nitrogen compounds in the film and release gaseous nitrogen. As the two film strips pass through the housing, a vacuum is produced along a pair of narrow slotted openings extending lengthwise adjacent to the longitudinal edges of the films to prevent air from seeping in between them, which maintains the films in intimate contact during exposure. The exposed vesicular film is developed by passing it over a heating drum which causes the released nitrogen to nucleate into microscopic vesicules in the areas of irradiation.



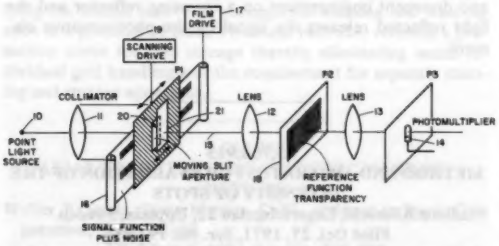
The developed film is fixed by irradiating it with ultraviolet light while maintaining the film in intimate contact with a cooling drum, which decomposes the remaining nitrogen compounds in the film thus desensitizing the film to further irradiation. The simultaneous cooling and fixing insures a relatively low exit temperature of the film leaving the fixing station which allows a powerful light source to be used for fixing which enables the film to be printed at high speeds. The fixing lamp is movable away from the cooling drum so that the lamp will not have to be shut off each time the film is threaded through the fixing station.

3,768,907

SCANNING APERTURE PARTIALLY COHERENT OPTICAL CORRELATOR

Ross E. Williams, Yonkers, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 17, 1972, Ser. No. 272,537
Int. Cl. G06k 9/08; G02b 5/18
U.S. Cl. 356—71 **4 Claims**



A partially coherent optical correlator of, for example, the frequency plane type, has a slit of adjustable width that moves rapidly in the spatial domain P_1 to scan a portion of the input signal recorded on a film strip which is moving relatively slowly in this same domain. The slit produces a plurality of correlation samples that are added incoherently in an energy detector located in the output plane P_3 to give one sample of the partially coherent correlation function for each scanning cycle. Repeated scanning cycles develop the full, partially coherent, correlation function.

3,768,908

REMOTE SENSING APPARATUS AND METHODS

Solomon Zaromb, 376 Monroe St., Passaic, N.J.

Filed Jan. 4, 1971, Ser. No. 103,507
Int. Cl. G01n 21/00; G01j 3/44
U.S. Cl. 356—103 **16 Claims**

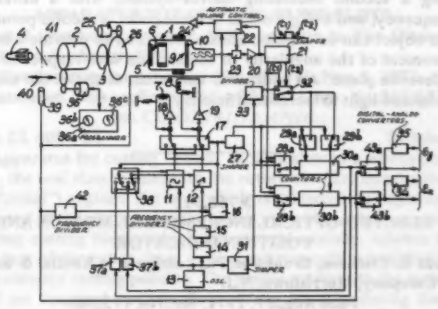
A lidar spectroscopic apparatus comprises a laser transmitter and a receiver in which the radiation return is spectranalyzed, a fluorescent target at a considerable distance from said transmitter and receiver, and means for aiming said transmitter and receiver at said fluorescent target. The presence of pollutants between the lidar system and said target is deduced from the attenuation of the radiation return at several wavelengths and/or from the Raman backscatter due to specific air pollutants.

3,768,909

DEVICE FOR MEASURING THE POSITION OF A RECEDING MOVING OBJECT IN RELATION TO A REFERENCE SYSTEM

Noel Henri Leon Ferrier, Montmorency, France

Filed Dec. 20, 1971, Ser. No. 209,532
Claims priority, application France, Dec. 24, 1970, 7046629
Int. Cl. G01b 11/26; G01c 3/08
U.S. Cl. 356—138 **8 Claims**



The device includes a viewing instrument with which is associated an analyzer for continuously analyzing the picture of

a background against which a missile moves. The analyzer comprises an image dissector tube operable to successively analyze the image vertically and thereafter horizontally. Two devices are associated with the dissector tube to gradually reduce the solid angle of sweep as the missile approaches its target and its trajectory tends to coincide with the aim axis or boresight, utilizing the same number of scan lines to provide a dissection of the image into the same number of points but with a periodicity of the analysis. The first device, which has a high time constant, is a variable focal length optical system programmed according to the type of missile fired and the range of the target. The second device, which has a low time constant, slaves the dimensions of the scanned area to the magnitude of the missile deviations to the boresight. Spurious landscape signals are eliminated directly upon the output of the dissected tube, and only the missile tracking signal is permitted to pass through.

3,768,910

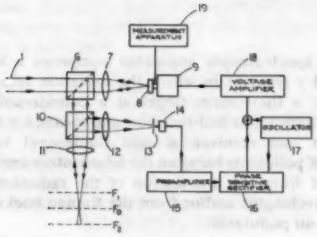
DETECTING THE POSITION OF A SURFACE BY FOCUS MODULATING THE ILLUMINATING BEAM

Carl A. Zanoni, Middletown, Conn., assignor to Zygo Corporation, Middletown, Conn.

Filed May 25, 1972, Ser. No. 256,693

Int. Cl. G01b *11/22*; **G01c** *3/08*

U.S. Cl. 356—167 **7 Claims**



An optical sensor is described for providing an output responsive to the position of a test surface with respect to a predetermined plane. A beam of radiant energy is focused by a lens onto the test surface, while being modulated along its optical axis by a mirror oscillating at a desired frequency. The first harmonic of the radiant energy reflected from the test surface is then monitored as to phase and amplitude by a single photodetector to provide a measure of the direction and distance of the test surface from the determined plane. By adding a second oscillating mirror system, with a different frequency, and a slight offset in focal point, a second point on the object can be simultaneously measured to provide a measurement of the angularity of the surface with respect to the reference plane. An additional embodiment shows the use of polarized light to increase efficiency.

3,768,911

ELECTRO-OPTICAL INCREMENTAL MOTION AND POSITION INDICATOR

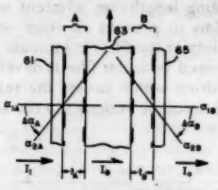
Kent E. Erickson, Brookside, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed Aug. 17, 1971, Ser. No. 172,383

Int. Cl. G01b *11/04*; **G06f** *7/38*; **G06g** *7/00*

U.S. Cl. 356—169 **17 Claims**

A compact electro-optical system provides electrical signals for indicating extent and direction of incremental movement. By employing a plurality of moire fringe-generating grating pairs in optical series, the system eliminates the need for a collimated light source or imaging optics, and further provides a multiplication of sensitivity.



3,768,912

OPTICAL METHOD AND DEVICE FOR MONITORING MOVING BODIES

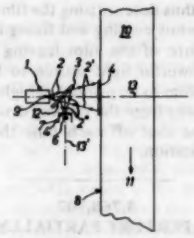
Rudolf Bohme, Goldach, Switzerland, assignor to Aktiengesellschaft Adolph Sauer, Arbon, Switzerland

Filed June 16, 1971, Ser. No. 153,530

Claims priority, application Switzerland, June 26, 1970, 9715/70

Int. Cl. G01n *21/18*, *21/30*

U.S. Cl. 356—199 **4 Claims**



The movement of a body is monitored by an optical method wherein a cone of light rays is reflected from a surface to a photosensitive element whenever the cone of rays is interrupted by a moving body or by an article carried on the moving body. A cone of light rays is emitted from a more or less or practical punctiform light source and reflected with unbroken and divergent impingement on a reversing reflector and the light reflected releases the signal on the photosensitive element.

3,768,913

METHOD AND APPARATUS FOR EVALUATION OF THE INTENSITY OF SPOTS

Vladimir Klimecki, Lagerlofsgatan 22, Uppsala, Sweden

Filed Oct. 27, 1971, Ser. No. 192,813

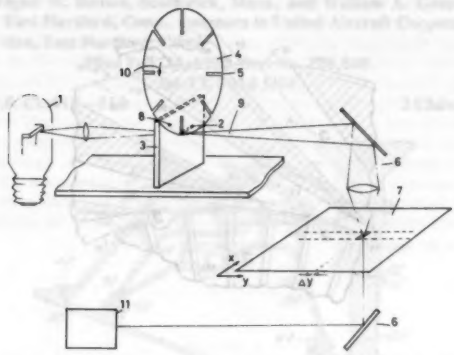
Claims priority, application Sweden, Nov. 2, 1970, 14780/70

Int. Cl. G01n *21/06*, *21/22*

U.S. Cl. 356—203 **12 Claims**

A method and apparatus to measure the integrated density of spots on photographic films is disclosed. The coordinates of spots of normal density are measured and stored in analog form in an analog memory. Evaluation of the integrated densi-

ty of weak spots is achieved by borrowing from the memory the coordinates of a previous spot of normal density and using



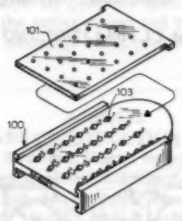
said coordinates as the contour of the weak spot. Existence conditions are given for a spot of normal density.

3,768,914

ELECTRON MICROSCOPY TISSUE GRID STAINING AND STORING RACK AND METHOD

Thomas D. Kinney, 3120 Devon Rd., and John E. P. Pickett, 3323 Pinafore Dr., both of Durham, N.C.

Filed Sept. 18, 1972, Ser. No. 290,170
Int. Cl. G01n *21/16*
U.S. Cl. 356—244 **11 Claims**



An apparatus and method for staining, washing and storing a plurality of grid mounted electron microscopy tissue specimens are based upon placing the grids having the mounted tissue in a rack which isolates and provides an identifying file indicia and fluid passages for staining and washing each of a plurality of grids. The same rack also receives a protective cover for grid storage thereby eliminating much individual grid handling and the requirement for separate staining and storage apparatus.

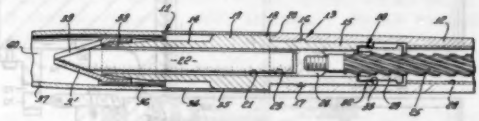
3,768,915

AXIAL FORCE LIMITING COSMETIC MARKING DEVICES

Walter B. Spatz, Santa Monica, Calif., assignor to Spatz Corporation, Venice, Calif.

Filed Dec. 6, 1971, Ser. No. 205,225
Int. Cl. B43k *29/06*
U.S. Cl. 401—50 **9 Claims**

A marking member (such as a cosmetic crayon or brush) disposed within a barrel is urged into engagement with a companion member (such as a sharpener or cosmetic mass) disposed in a cap rotatably mounted on the barrel through the action of a screw and nut device, the male member of the screw and nut device being slidably splined to the barrel, its companion female member being rotatable relative to the male member, the female member being rotated by the cap through a slippable clutch, which will slip upon engagement of the marking member against the companion member with a



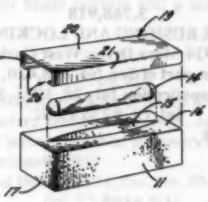
predetermined axial force, thereby limiting the force with which the marking member may engage its companion member and preventing crushing of the crayon or undue deformation and pressure of the brush against the cosmetic mass.

3,768,916

SPONGE WITH ENCAPSULATED LIQUID

Carl F. Avery, Rockford, Ill., assignor to Medical Supply Company, Rockford, Ill.

Filed Dec. 1, 1971, Ser. No. 203,629
Int. Cl. A46b *11/04*
U.S. Cl. 401—132 **2 Claims**



A scrubbing unit includes a sponge with a frangible ampoule containing a liquid soap disposed within a slot in the sponge. A cap fits on the sponge over the slot and pinches in the sides of the sponge to compress a portion of the sponge across the ampoule and thereby close the slot. This prevents fragments of the broken ampoule from coming out of the sponge and helps to directionalize the flow of soap through the sponge by reducing the permeability of the sponge adjacent the cap.

3,768,917

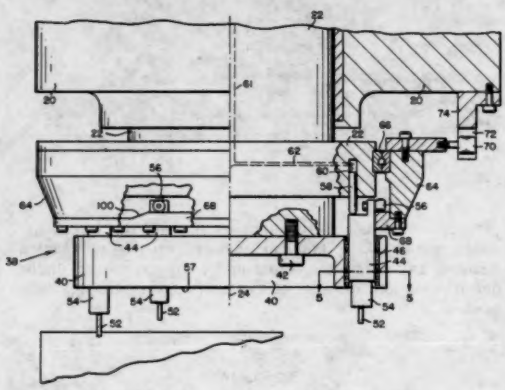
APPARATUS FOR CUTTING BLIND SLOTS

Ernst J. Hunkeler, Fairport, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Continuation-in-part of Ser. No. 194,311, Nov. 1, 1971, abandoned. This application May 22, 1972, Ser. No. 255,853
Int. Cl. B23b *41/12, 47/18*
U.S. Cl. 408—54 **7 Claims**

Apparatus for cutting "blind" arcuate slots in a workpiece, e.g., the seal slots required for the rotors of rotary combustion ("Wankel") engines. An access hole is drilled at the beginning and end of the proposed slot which is cut with a rotating cutter having cutting blades which are movable axially, relative to the face of the cutter, from a retracted non-cutting position to an extended cutting position. The blades rotate with the cutter and are "popped out" to their cutting position during their passage across the beginning access hole and, similarly, are retracted during their passage across the access hole at the slot end. In the preferred apparatus, extension and retraction of the cutter blades is controlled by a cam-and-hydraulic system

which causes each successive blade to "pop out" the same predetermined distance, in-feed being accomplished by moving the entire cutting apparatus axially toward the workpiece



until a full-depth position is reached. The cam-and-hydraulic system is specially designed to accomplish rapid blade movement and to suppress bouncing by blades "popped out" for cutting.

3,768,918

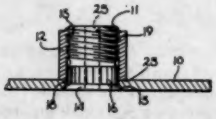
TEMPLATE BUSHING AND LOCKING MEANS

Dale L. Bethke, 2924 Mesa Drive, West Covina, Calif.

Continuation-in-part of Ser. No. 848,420, Aug. 8, 1969, abandoned. This application July 28, 1971, Ser. No. 166,770

Int. Cl. B23b *49/02*

U.S. Cl. 408—72 B 4 Claims



A bushing having a bore for guiding a drill bit and means for locking the bushing to a template or jig is disclosed. The bushing, which is particularly suitable for thin templates or jigs, has an exterior chamfer on one end for engaging a countersunk aperture in the template and left-hand threads disposed about its other end. A lock ring, adaptable for engaging the left-hand threads on the bushing rigidly couples the bushing to the template. The torque of a drill bit engaging the bushing bore tends to tighten the lock ring to the template; thus, the bushing remains secure during use.

3,768,919

PIPE DIFFUSER WITH AERODYNAMICALLY VARIABLE THROAT AREA

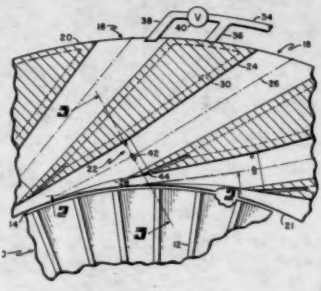
John A. O'Connor, Orange, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Oct. 18, 1971, Ser. No. 190,199

Int. Cl. F04d *29/44, 27/02*

U.S. Cl. 415—116 8 Claims

A "pipe" diffuser comprises an annular housing surrounding a centrifugal impeller and has primary diffuser passages intersecting with one another to form scallop-shaped entrance edges. A series of ports are provided in the throat region of the diffuser passages to momentarily inject pressurized diffuser



exit air to aerodynamically vary the throat flow characteristics and prevent surge during operation of the stage above its normal surge line.

3,768,920

MULTI-FLOW AIR BLOWER FOR FUEL OPERATED MOTOR VEHICLE HEATERS

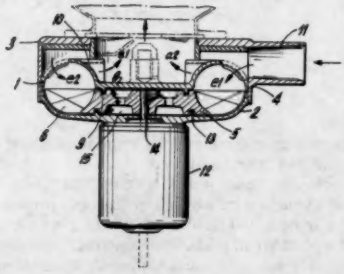
Reinhard Gerwin, Stuttgart-Ost, Germany, assignor to J. Eberspacher, Esslingen/Neckar, Germany

Filed July 12, 1972, Ser. No. 271,126

Claims priority, application Germany, July 14, 1971, P 21 35 093.6

Int. Cl. F04d *27/00, 7/02*

U.S. Cl. 415—148 9 Claims



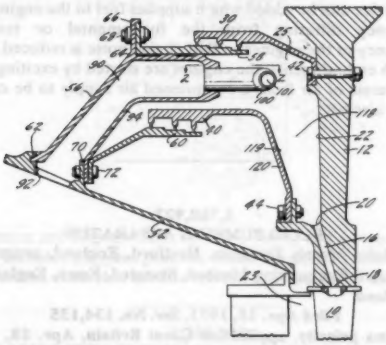
A multi-flow air blower for a motor vehicle heater is provided with a housing having a cover member defining a flow channel for air passage through the blower. A bladed impeller located within the housing operates to drive through the blower and into the channel defined by the cover member. A plurality of transversely extending web plates are provided within the cover member with the webs being positioned to define on either side thereof an air inlet opening and an air outlet opening. Slidable switching means operatively associated with said webs are actuated between a first and a second position in order to selectively open or close the inlet and outlet openings defined by the webs thereby enabling selection of the number of air flow paths with which the blower is operated.

3,768,921

CHAMBER PRESSURE CONTROL USING FREE VORTEX FLOW

Wayne M. Brown, Southwick, Mass., and William A. Grace, East Hartford, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Feb. 24, 1972, Ser. No. 228,848
Int. Cl. F01d 5/08
U.S. Cl. 415—116 2 Claims



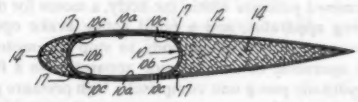
Inlet means supplies a continuous flow of gas with a swirl velocity and at a chosen static pressure to a chamber to establish a free vortex flow therein. Surfaces define an annular path within the chamber that maintains the free vortex flow and guides it toward chamber outlet means. That portion of the chamber not including the annular path becomes pressurized to the supply static pressure of the gas, while the static pressure of the gas within the path changes with its distance from the vortex axis. By properly spacing and locating the inlet means from the outlet means and by properly sizing the annular path, the discharge static pressure of the gas can be controlled.

3,768,922

ROTOR BLADE CONSTRUCTION AND METHOD

Thomas P. Dixon, Stratford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Feb. 14, 1972, Ser. No. 225,778
Int. Cl. B64c 27/46
U.S. Cl. 416—61 7 Claims



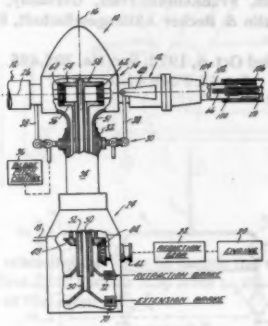
A rotor blade has a tubular spar extending lengthwise of the blade which forms the main strength member of the blade. The spar is closed at both ends to contain a gaseous fluid under pressure and has pressure indicating means responsive to pressure loss if a crack forms in the wall of the spar. A continuous outer skin of airfoil section is wrapped chordwise around the spar and extends fore and aft of the spar to form the airfoil contour of the blade. The spaces fore and aft of the spar within the outer skin are filled with a fluid impervious material which may be introduced as a foam. To insure indicator operation based on a pressure drop due to the escape of gas through a crack in the spar, continuous spanwise conduits are provided in the filler material about the outside perimeter of the spar. These conduits communicate with the atmosphere at the blade tip. Several ways are disclosed of forming these conduits.

3,768,923

VARIABLE LENGTH BLADE

Evan Albern Fradenburgh, Fairfield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 18, 1969, Ser. No. 859,094
Int. Cl. B63h 1/06
U.S. Cl. 416—89 23 Claims



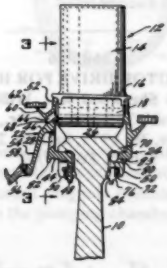
A variable length blade in telescopic form adapted to be used with comparable blades to form a variable diameter rotor or propeller and wherein the outer blade portion is caused to telescope with respect to the inner blade portion by jackscrew action and wherein the outer blade portion is connected to the jackscrew by a plurality of tension-torsion straps extending between the outer blade portion and a series of nuts on the jackscrew.

3,768,924

BOLTLESS BLADE AND SEAL RETAINER

Robert J. Corsmeier; Joseph W. Savage, and Richard H. Andersen, all of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 6, 1971, Ser. No. 204,992
Int. Cl. F01d 5/32
U.S. Cl. 416—95 14 Claims



A boltless blade retainer which provides a cooling air chamber around the dovetail slots of a turbomachinery rotor is disclosed to include a continuous annular ring which has a portion extending radially outwardly therefrom to radially position the rotor blades within the dovetail slots and to preclude axial movement of the rotor blades within the dovetail slots. The blade retainer further includes a plurality of tabs which fit between fingers which extend from a face of the rotor disc near the rim thereof. The tabs and fingers hook together in an interlocking manner which prevents relative rotation of the blade retainer and the disc. After the retainer is positioned on the disc, a split retaining ring is installed under the hook-shaped disc fingers thus securing the blade retainer to the disc. A rabbet is provided near the rim of the rotor disc to support the retainer in the radial direction.

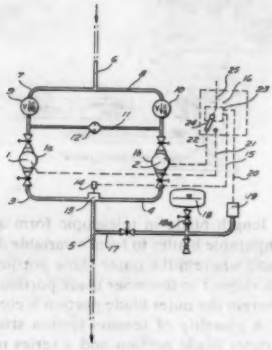
ERRATUM

For Class 416—21 see:
Patent No. 3,768,926

3,768,925
PUMP ARRANGEMENT FOR CONSUMER APPARATUS

Manfred Klemm, Frankenthal/Pfalz, Germany, assignor to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Germany

Filed Oct. 6, 1972, Ser. No. 295,495
Int. Cl. F04b *41/06, 49/02*
U.S. Cl. 417—8 **9 Claims**



When the pressure in a consumer conduit drops, it is increased by one of two alternately operating pumps, whose drive motors are, respectively, actuated by a pressure responsive switch. A throttling conduit connects the suction inlets of the pumps, and both pump outlets are connected with the consumer conduit so that the fluid pumped by the operative pump is circulated through the throttling conduit and the respective other pump so that the operative pump is cooled when no fluid is taken through the consumer conduit. At the same time, the fluid in the other pump is exchanged. When the temperature of the circulated fluid becomes too high, the drive motor of the operative pump is disconnected.

3,768,926
PULSE JET ROTOR DRIVE FOR HELICOPTER

Robert J. Pegg, 106 Sherwood Rd., Williamsburg, Va., and Clement J. Makowski, 33 Tidewater Dr., Hampton, Va.

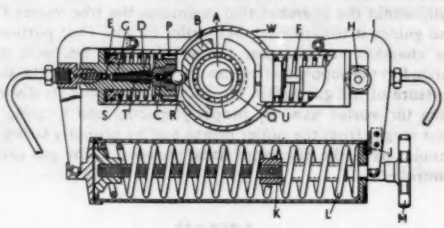
Filed Nov. 30, 1971, Ser. No. 203,377
Int. Cl. F02k *7/02*
U.S. Cl. 416—21 **9 Claims**

A pulse-jet system for driving rotary wing aircraft. In a first embodiment the tips of the rotors of a rotary wing aircraft are provided with "U"-shaped valveless pulse jet engines having an annular scoop adjacent to the lip of the inlet to provide fresh air thereto at increased air velocity. In a second embodiment a pair of straight, valveless pulse jet engines are mounted perpendicular to the rotor shaft of a rotary wing aircraft so as to rotate therewith. These engines may be contained within a streamlined cowl at the opposite outer ends of which are attached flow augmenters which change the direction and increase the flow of exhaust gases from the engines by 90° and eject the same in a chordwise direction. This forms a propulsion unit. When a cowl is used, air enters the cowl through an inlet disposed along the axis of the rotor shaft. The propulsion unit is adjusted angularly and heightwise with respect to the rotor blades in order to optimize the aerodynamic effects of the flow of exhaust gases over the blades. In both of the embodiments, a first control device primarily governs the engine thrust and consequently the rotor speed while a second control device can be added which supplies fuel to the engines at a frequency differing from the fundamental or resonant frequency of the engines so that engine noise is reduced. Also, in both embodiments, the engines are started by exciting them with bursts of air from a compressed air supply to be carried on the aircraft.

3,768,927
FLUID PUMPING APPARATUS

Alan John Morris Freeman, Hertford, England, assignor to Stansted Engineering Limited, Stansted, Essex, England England

Filed Apr. 15, 1971, Ser. No. 134,135
Claims priority, application Great Britain, Apr. 18, 1970, 18,632/70; Sept. 22, 1970, 4,676/70
Int. Cl. F04b *49/00*
U.S. Cl. 417—38 **6 Claims**



In one aspect a hydraulic pump unit comprises fluid pumping apparatus having a pair of axially aligned cylinder and piston units, wherein the cylinder body is movable independently of the piston, the movement of the cylinder body being critically restrained by a resilient member so that the movement of the cylinder body may only occur upon attainment of a predetermined pressure within the body, a motor for driving the pumping apparatus, and a rapid acting brake operable upon movement of a cylinder body to stop the motor and hence the operation of the pumping apparatus. In a further aspect a hydraulic pump unit comprises a high pressure pump, a motor for driving the pump, a pressure switch operable upon attainment of a desired pressure, and a rapid acting brake responsive to the switch and arranged to stop the pump.

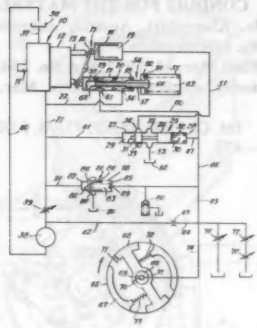
3,768,928
PUMP CONTROL SYSTEM

Wendell E. Miller, Warsaw, and Raymond E. Johnson, Muncie, both of Ind., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed June 1, 1971, Ser. No. 148,559
Int. Cl. F04b *1/26, 49/00*; F15b *1/00*
U.S. Cl. 417—213 **5 Claims**

A hydraulic system including a variable displacement pump with a displacement control mechanism, a sensing valve to control the displacement control, and a logic system providing over-ride control of the sensor valve and the displacement of the pump.

Specific embodiments include the over-riding of load or flow compensated systems, torque over-ride by the use of a



pressure and displacement sensitive valve, and a sensor valve that includes a bypass position which cooperates with the displacement control to control the effective output of the pump.

3,768,929

LIQUID FUEL INJECTION PUMPING APPARATUS

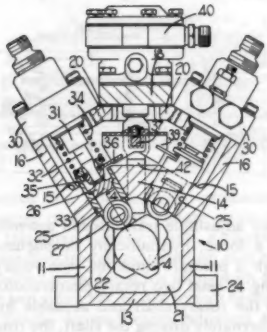
Kenneth Albert Walters Kemp, London, and Dorian Farrar Mowbray, Burnham, both of England, assignors to C.A.V. Limited, Birmingham, England

Filed Apr. 27, 1971, Ser. No. 137,936

Claims priority, application Great Britain, May 2, 1970, 21,209/70

Int. Cl. F04b *1/04*

U.S. Cl. 417—270 **3 Claims**



A fuel injection pumping apparatus includes a plurality of injection pumps disposed in Vee formation. The injection pumps are actuated by cams and are controlled by a control rod disposed between the two banks of injection pumps.

3,768,930

FUEL PUMP ACTUATOR

Francis Robert Draper, Loughton, England, assignor to Simms Motor Units Limited, London, England

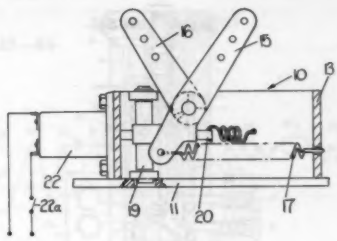
Filed Dec. 2, 1971, Ser. No. 204,097

Claims priority, application Great Britain, Dec. 5, 1970, 57,876/70

Int. Cl. F04b *21/00*

U.S. Cl. 417—313 **4 Claims**

A device for use in association with aliquid fuel pumping apparatus includes a first lever for connection to a stop lever of the apparatus resilient means which loads the lever so that the stop lever cuts off the supply of fuel catch means operable to retain the lever against the action of the resilient means and



means for releasing the lever to permit the resilient means to move the first lever and the stop lever to the position in which the supply of fuel is cut off.

3,768,931

MAGNETICALLY ACTUATED PUMP WITH FLEXIBLE MEMBRANE

Frederick Gordon Willis, Jr., Winchester, Mass., assignor to Richard J. Birch, Wellesley, Mass; a part interest

Division of Ser. No. 139,701, May 3, 1971, Pat. No. 3,733,616. This application Jan. 22, 1973, Ser. No. 325,853

Int. Cl. F04b *17/00, 35/00, 43/00*

U.S. Cl. 417—322 **6 Claims**

An electromagnetic pump which utilizes a plurality of electromagnets to alternately repel and attract a corresponding plurality of permanent magnets mounted on a flexible membrane which forms the pumping chamber.

3,768,932

AUTOMATIC DOUBLE ACTING DIFFERENTIAL PUMP

Josef Svercl, Olomouc; Harald Bartos, Cechy pod Kosirem, and Jan Planica, Olomouc, all of Czechoslovakia, assignors to Sigma, narodni podnik, Olomouc, Czechoslovakia

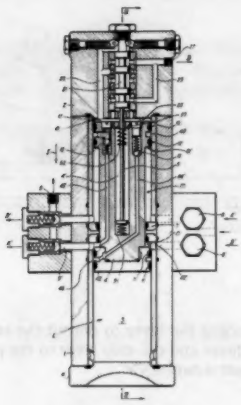
Filed June 9, 1971, Ser. No. 151,202

Int. Cl. F04b *17/00, 35/00*

U.S. Cl. 417—393 **3 Claims**

An automatic, double acting, differential pump having a body with a cavity, a reciprocable piston in the cavity which divides it into a first functional pressure space and a pair of second functional pressure spaces straddling the first space, means for interconnecting the second spaces as well as intake

and outlet means communicating with them, sealing means dividing the first space into two portions and intake and outlet



means communicating with the two portions of the first space when the piston is moved towards either of the second spaces.

3,768,933

FAN FOR GAS TURBINE UNIT

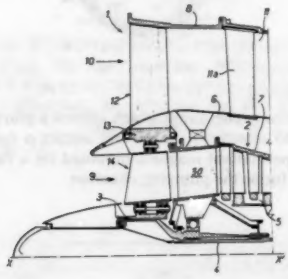
Jean Georges Bouiller, Brunov; Louis Jules Bauger, Vanves, and Armand Jean-Baptiste Lacroix, Itteville, all of France, assignors to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation, Paris, France

Filed June 17, 1971, Ser. No. 154,070

Claims priority, application France, June 22, 1970, 7022919

Int. Cl. F04b *17/00*

U.S. Cl. 417—408 **6 Claims**



A gas turbine unit, in particular for an aircraft turbojet engine, comprises a fan rotating coaxially in front of an axial flow compressor. The fan has an outer blading ring fixed to a rim attached to a hub of the fan through an inner blading ring, and the inner blades are pivotally attached, at the root and tip ends respectively, to the hub and to the rim about pivot axes parallel to the axis of rotation of the hub. The inner blades are all inclined in the same direction and at the same angle in relation to the hub circumference. The rim can thus expand freely under the effect of the centrifugal forces applied to it in operation by the outer blading, without local distortion and without the application of any bending stresses to the inner blades.

3,768,934

APPARATUS FOR CONTINUOUSLY CONVEYING SEMISOLID MATERIAL BY THE ACTION OF CIRCULATING SQUEEZE ROLLERS ON A FLEXIBLE CONDUIT FOR THE MATERIAL

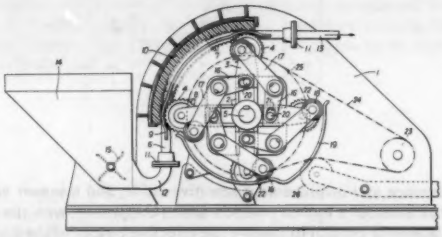
Otto Magerle, Klagenfurt, Austria, assignor to Fa Tukiem Trust, Vaduz, Liechtenstein

Filed Mar. 14, 1972, Ser. No. 234,541

Claims priority, application Austria, Mar. 22, 1971, 10A 2450/71

Int. Cl. F04b *43/08, 45/06, 15/02*

U.S. Cl. 417—477 **7 Claims**



An elastic flexible conveying tube has a length portion provided on the outside with ribs. Revolvable squeeze rollers are movable along said length portion in engagement therewith and have teeth adapted to mesh with said ribs.

3,768,935

CONTINUOUSLY ADJUSTABLE TRANSMISSION

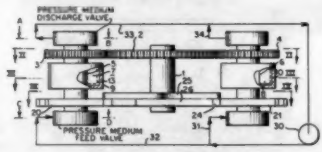
Georg Walk, Rheydt, Germany, assignor to A. Monforts, Monchengladbach, Germany

Filed Nov. 29, 1971, Ser. No. 202,828

Claims priority, application Germany, Dec. 1, 1970, P 20 59 011.8

Int. Cl. F01c *1/00;* **F03c** *3/00*

U.S. Cl. 418—34 **3 Claims**



Continuously adjustable transmission assembly for directly transforming a force, hydraulically or pneumatically transmitted through a pressure medium, into rotary motion of a shaft, including at least two rotary piston motors operatively connected to the rotary shaft and actuable by the pressure medium for alternately driving the shaft, the rotary piston motors each including a rotor and a stator, both of the rotors being coupled to the rotary shaft and thereby to one another, and stepwise acting auxiliary transmission means coupling each of the rotors to its respective stator so that the respective stator is stationary during a work cycle of the respective rotor, and rotates faster than the rotor during an idling cycle of the rotor so as to overtake the rotor.

3,768,936

COMBINATION APEX AND SIDE SEALS FOR ROTARY PISTON ENGINES

Harold E. McCormick, Ballwin, Mo., assignor to Ramsey Corporation, St. Louis, Mo.

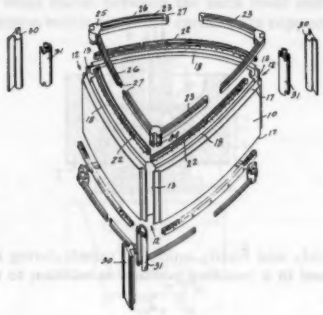
Filed Oct. 27, 1971, Ser. No. 193,059

Int. Cl. F01c *19/08*

U.S. Cl. 418—142 **19 Claims**

A combination apex corner seal and side compression seal for rotary piston internal combustion engines, the combina-

tion consisting of wishbone shaped members having two legs diverging from an integral hub, the hub being shaped to form



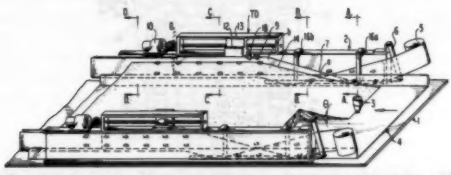
the end member of an apex seal, the legs of the wishbone indexing with grooves in the side of the piston and forming side compression seals.

3,768,937

APPARATUS FOR CONTINUOUSLY PRODUCING A SNYTHETIC POLYMER FOAMED MASS HAVING SQUARE CROSS SECTION

Hisashi Haga, Hyogo, and Yukio Takamatsu, Akashi-shi-Hogo, both of Japan, assignors to Toyo Rubber Industry Company, Ltd., Osaka, Japan

Filed Apr. 30, 1972, Ser. No. 240,405
Int. Cl. B29d *27/00*
U.S. Cl. 425—4 8 Claims



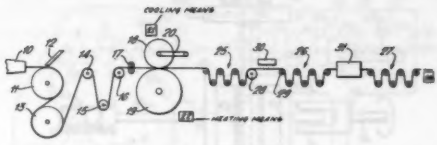
An apparatus for continuously producing a synthetic polymer foamed mass having square cross sections which comprises a travelling conveyor belt, a channel-shaped continuously extending trough mounted on said belt and moving with the travelling of said belt for filling with a foaming liquid material, the two sidewalls of said trough being lower than the height of a finally foamed mass, adjacent to each of said sidewalls, inside said trough and in the region where foaming of said foaming liquid material begins to occur and is finished a stationarily arranged guiding plate nearly flush with or higher than the height of a finally foamed mass, said guiding plate having in the middle portion thereof an oblique upper rim portion of an abliqueness nearly equal to or slightly greater than the rising angle of the foaming material and being formed in a twisted and folded shape, a bag-shaped or elongated tubular film or sheet of an synthetic polymer or resin surrounding each of said guiding plates, said film or sheet being movable along said guiding plate in the same direction as and at an equal speed to the speed and direction of said trough and upwardly along the lateral ends of said foaming material in the area of said oblique upper rim portion of said guiding plate, means fixed to the front end of each of said guiding plates for blowing air or a gas into said film or sheet, and means for cutting the top portion of each of said films or sheets, said means being fixed on the rear end portion of said oblique upper rim portion, is disclosed.

3,768,938

TEXTILE PROCESS AND APPARATUS

George Waterhouse, Cheshire, England, assignor to Ernest Scragg & Sons Limited, Macclesfield, England

Filed Apr. 9, 1971, Ser. No. 132,645
Claims priority, application Great Britain, Apr. 10, 1970, 17289/70
Int. Cl. B29d *23/03*
U.S. Cl. 425—66 6 Claims



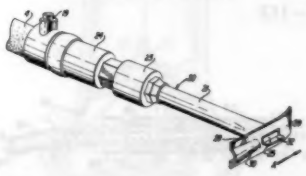
Apparatus is provided for the manufacture of textile filamentary or fibrous products from fibrillatable thermoplastic material comprising a film extruder, a cooling roller on which the extruded film is laid by an air knife, film tensioning rollers, a heated film support roller and a cooled circumferentially grooved forging roller die which is urged against the film passing through a nip formed therebetween to deform the film and form latent filaments therein, further rollers for stretching the forged film and means for effecting or assisting fibrillation of the film into filamentary or fibrous form.

3,768,939

NOZZLE APPARATUS FOR CEMENTITIOUS MATERIALS

Wesley A. Gramling, 6804 Glenmont St., Falls Church, Va.

Filed Feb. 18, 1971, Ser. No. 116,556
Int. Cl. B28b *3/00*
U.S. Cl. 425—87 1 Claim



A system for pumping a cementitious mix from a hopper and introducing it into remotely located cavity spaces, for instance between masonry units, or into cracks in walls, or into spaces inside hollow door or window frames, etc. The disclosure provides a flexible conduit connected between a pump and a discharge nozzle, and in particular includes actuating means at the nozzle end of the conduit for starting and stopping the pumping action, as distinguished from controlling the flow in the conduit using valves. When the pump is running the nozzle discharges the mix and then strikes the joint immediately thereafter as the nozzle is moved along to provide in combination with the pumping control an efficient system for completing such joints.

3,768,940

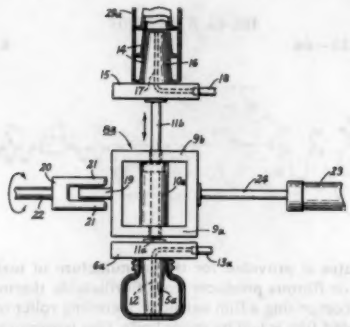
APPARATUS FOR THE PRODUCTION OF COMPOSITE CONTAINERS

Emery I. Valyi, 5200 Sycamore Avenue, Riverdale, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,314
Int. Cl. B29d *23/03*
U.S. Cl. 425—112 13 Claims

Injection blow molding apparatus including a blow core, a parison mold and a blow mold operating in an injection blow

molding cycle. A transfer device for preformed liners is shiftable from a liner receiving position into a position to introduce such liner into the blow mold after the finished article has



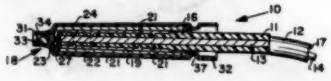
been removed from the blow mold. The blow mold then acts as a liner carrier to transfer the liner to the blow core as the blow core is introduced into the parison mold for the molding of the parison.

3,768,941

APPARATUS FOR MAKING ELECTRICAL CONNECTOR

Ralph G. D'Ascoli, and Leon L. Alleva, both of Westchester, N.Y., assignors to The Anaconda Company, New York, N.Y

Division of Ser. No. 24,952, March 6, 1970, abandoned, which is a division of Ser. No. 710,944, March 6, 1968, Pat. No. 3,539,708. This application Mar. 31, 1972, Ser. No. 240,313
Int. Cl. B29c *27/22*
U.S. Cl. 425—112 1 Claim



Moisture-tight connectors are made from cut lengths of heat-shrinkable plastic tubing by shrinking one end of the tubing around a plastic pellet that softens and bonds to it thus forming a seal. An inward constriction is formed in the other end of the tubing by shrinking it over a block that is spaced away from an internal metal sleeve. The constriction is needed to retain a dielectric paste with which the connector is filled.

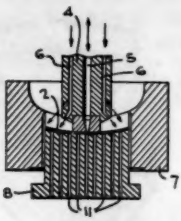
3,768,942

DEVICE FOR PREPARING LABELS OR PLATES IN A BLOW MOLDING APPARATUS FROM THERMOPLASTIC ARTIFICIAL MATERIAL

Erhard Langecker, Hohuschner Weg, Meinerzhagen, Germany

Division of Ser. No. 132,574, April 8, 1971. This application July 27, 1972, Ser. No. 275,493
Int. Cl. B29d *23/03*
U.S. Cl. 425—126 2 Claims

A process and device for applying label and plates on hollow bodies of thermoplastic synthetic substances in which a blow mold has openings therein to guide a punch and is provided with grooves for ventilation purposes. The method includes the insertion of a thin foil into a blow mold and holding the foil in a curved position, corresponding to the curve of the



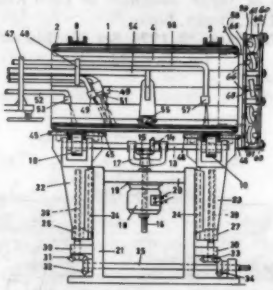
hollow body and finally holding a punch during the blowing process and in a receding position in relation to the walls of the mold.

3,768,943

APPARATUS FOR PRODUCING TUBULAR CYLINDRICAL BODIES OF HARDENABLE MOLDING COMPOSITIONS

Hans Maihart, Wels, Austria

Division of Ser. No. 120,525, March 3, 1971. This application Oct. 28, 1971, Ser. No. 193,542
Int. Cl. B29d *7/14*; B22d *11/06*
U.S. Cl. 425—224 12 Claims



The apparatus comprises a tubular mold which is rotatably supported on two sets of rollers, each comprising three rollers, which are mutually adjustable to accommodate molds of different diameters. A plurality of endless belts extend axially of the mold in contiguous relation circumferentially of the mold, conforming essentially to the inner generated surface of the mold, and these belts form the surface on which layer-forming components for producing the tubular cylindrical bodies are deposited. As the progressively formed body is withdrawn from the mold, the belts are drawn along with the body. A special supporting arrangement of spaced sets of rollers is provided exteriorly of the mold to support the body as it exits from the mold. Formation of a body is started by initially telescoping a short piece of pipe into the exit end of the mold and depositing the layer-forming components on the inner surface of this piece of pipe.

3,768,944

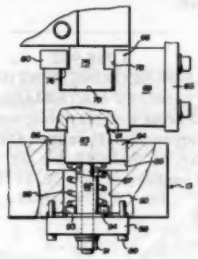
FLOATING PARISON MOLD FOR INJECTION BLOW-MOLDING MACHINE

Lawrence D. Ninneman, Toledo, Ohio, assignor to Owens-Illinois Inc., Toledo, Ohio

Filed Jan. 31, 1972, Ser. No. 222,128
Int. Cl. B29d *23/03*
U.S. Cl. 425—242 B 7 Claims

An injection blow-molding machine or the like wherein a split, open-ended parison mold is provided by mold halves ac-

tuated on separate carriers to and from a closed mold-defining position over an injection orifice. An upper neck mold is moved downwardly against the parison mold halves to clamp the parison mold halves between the neck mold and the orifice. The parison molds and their carriers are supported for a



lateral movement on slide elements which are vertically displaceable to compensate for thermal expansion and contraction of the mold elements during molding, thus insuring the injection molding of a flash-free parison, despite such thermal variations.

3,768,945

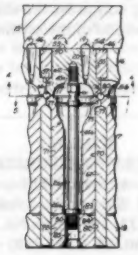
INJECTION MOLDING APPARATUS PROVIDING A STRIPPABLE FLASH FOR PRODUCING A PLURALITY OF FLASH-FREE ARTICLES

George R. Waid, Willoughby Hills, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 662,713, Aug. 23, 1967, Pat. No. 3,557,270. This application Aug. 5, 1970, Ser. No. 61,497

Int. Cl. B29f *1/00*

U.S. Cl. 425—250 **3 Claims**



In a method and apparatus for molding valve stems for tires of an automotive vehicle, molding material is injected into a multipart mold under sufficient pressure to flow between the cavity forming mold members at the interface therebetween and into secondary cavities. As a result, a continuous mat of material surrounds the molded articles. The mat includes relatively thick portion formed in the secondary cavities. This mat is removed from the mold and readily separates from the valve stems in a uniform manner.

3,768,946

FREQUENCY CARRIER MOLDING APPARATUS

Walter Matuschke, Kaiser-Wilhelm-Str. 6, 2, Hamburg, 36 Germany

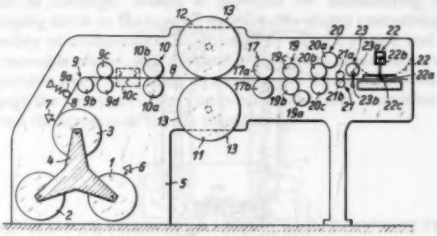
Filed Apr. 5, 1971, Ser. No. 131,289

Claims priority, application Germany, Apr. 4, 1970, P 20 16 228.1

Int. Cl. B29c *3/02, 15/00*

U.S. Cl. 425—363 **4 Claims**

A method of producing plate-like supports on which frequencies are recorded, and having an impressed surface, comprises the successive pressing of fractional areas of a support in chronological sequence. The supports may be records applied in succession onto one strip of the pressed material and subsequently stamped out individually from the strip or cut out therefrom with fractional and rectangular surrounding areas of the strip. A device for carrying out the method comprises two parallel cylinders rotatably mounted in a machine



frame, at least one of which can be driven and is adapted to receive impression-applying dies for pressing the strip surface. The strip is fed between the cylinders and comprises a surface layer capable of taking the impression and a supporting layer of a different material. When both sides of the strip are to be impressed two such surface layers are provided with an intermediate supporting layer sandwiched between them.

3,768,947

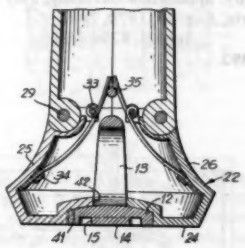
SEAL RING AND HOUSING

Kerwin Duneier, 42 Cathay Rd., East Rockaway, N.Y.

Filed Dec. 7, 1971, Ser. No. 205,633

Int. Cl. B29c *1/00*; A44c *9/00*

U.S. Cl. 425—386 **6 Claims**



A finger ring is provided having a face which is carved with any desired ornamental pattern so that the face can be used in the manner of a seal to impress the ornamental design of the carving into soft wax. A housing is provided for receiving and removably retaining therein the finger ring with the face of the finger ring flush with an outside surface of the housing wherein the housing, when assembled with the finger ring, can act as a desk seal.

3,768,948

BLOW MOLD

Charles Horberg, Jr., Northbrook, and Richard K. Shelby, Hinsdale, both of Ill., assignors to Monsanto Company, St. Louis, Mo.

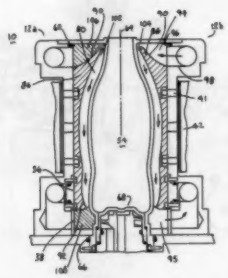
Filed Dec. 20, 1971, Ser. No. 209,600

Int. Cl. B29d *23/03*

U.S. Cl. 425—387 **11 Claims**

A blow mold having high heat transfer capacity which includes carrier supported shells with cavity portions defining the article shape, each shell having the fins on its back surface

extending toward its carrier, and a backing member intermediate each carrier and shell which closes the front of the grooves between the fins to form heat transfer channels on the back of each shell, the backing member being contoured to direct fluid to and away from the channels in a streamlined fashion. The mold is formed by milling grooves in the back



surface of a formed shell, assemblying the shell to the carrier with the grooves spaced from and facing the carrier and with contoured filler blocks in place at opposite ends of the space, filling the remaining space between the carrier and shell with the backing member without completely filling the grooves and then removing the blocks leaving voids defining manifolds communicating with the ends of the grooves.

3,768,949

FLATTENING AND TAKE-OFF APPARATUS FOR BLOWN TUBULAR PLASTICS FILM

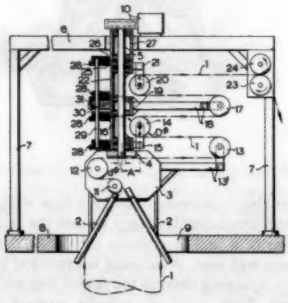
Hartmut Upmeier, Tecklenburg, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed July 19, 1971, Ser. No. 163,985

Claims priority, application Germany, July 17, 1970, P 20 35 584.4; Austria, Aug. 28, 1970, 7861

Int. Cl. B29d 7/22

U.S. Cl. 425—392 **18 Claims**



The apparatus serves to handle film made by a stationary blowhead and comprises flattening plates and squeeze rolls which are reversibly rotatable about the axis of the tubular film fed thereto. At least two direction-changing rolls for deflecting the web through about 180° and two turning rods for deflecting the web through about 180° with simultaneous change in direction are disposed in succession and in alternation between the flattening plates and take-off rolls, on the one hand, and a stationary pair of feed rolls, on the other hand, and are mounted on supports which are rotatable about the axis of rotation of the flattening plates and pivotally movable relative to each other. Said rolls and rods are arranged so that the axes of the direction-changing rolls and of the turning rods are tangential to circles centered on the axis of rotation of the flattening plates. The radius of the circle which is inscribed in the path of the pivotal movement of the axes of the turning rods is $\pi/4$ diameter of the turning rods. The direction-changing rolls are in every possible operating position radially outwardly of those portions of the turning rods which are wrapped by the web.

3,768,950

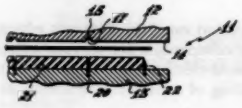
APPARATUS FOR SCORING SYNTHETIC PLASTIC SHEET MATERIAL

Richard C. Ihde, Parma Heights, Ohio, assignor to Champion International Corporation, Hamilton, Ohio

Division of Ser. No. 702,082, Jan. 31, 1968, Pat. No. 3,594,464. This application Nov. 30, 1970, Ser. No. 93,854

Int. Cl. B29c 23/00

U.S. Cl. 425—398 **5 Claims**



Apparatus for forming a score line of predetermined configuration in synthetic plastic sheet material includes a female die member having a slot corresponding to a desired score line, a male scoring member including a scoring rule movable against the sheet material to stretch it into the slot, and a resilient material frictionally engaging the sheet to immobilize the sheet between the members in those areas bordering the slot during score-forming. The resilient material extends along opposite sides of the rule and above its operable end. In one embodiment, the scoring member is of sufficient dimension to extend into the slot and compress the sheet material between the slot's bottom and the end of the scoring rule.

3,768,951

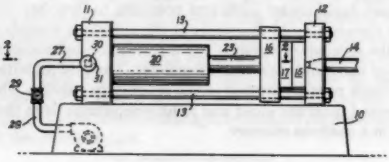
HYDRAULICALLY PRESSURIZED MOLDING APPARATUS

Emery I. Valyi, 5200 Sycamore Avenue, Riverdale, N.Y.

Filed June 23, 1972, Ser. No. 265,483

Int. Cl. B29c 3/00

U.S. Cl. 425—408 **17 Claims**

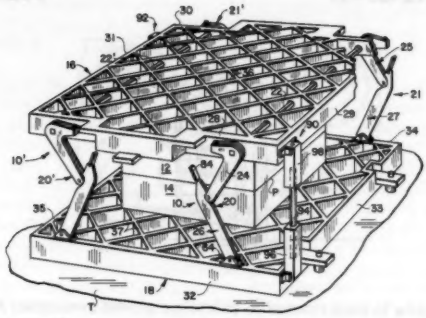


Pressure molding apparatus wherein the movable platen is actuated by a two part piston. The piston parts are separated to form an enclosed space therebetween in the cylinder in which hydraulic fluid is maintained. The fluid advances and retracts with the piston parts and, when pressurized, exerts holding pressure to oppose the molding pressure. The trailing part of the piston is mechanically locked in advanced position during the molding step.

3,768,952
MOLD CLAMP

Denis Connolly, Fremont, Ohio, assignor to Sund-Borg Machines Corporation, Fremont, Ohio

Filed Aug. 24, 1971, Ser. No. 174,454
Int. Cl. B29c *1/16*
U.S. Cl. 425—450 16 Claims

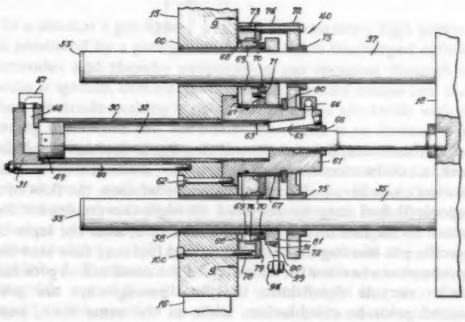


Apparatus for holding molds together, including latch mechanisms for retaining mold members together and yieldably applying a compressive load thereto. A latch member of each latch mechanism is movably secured to one of two parallel platens that support opposed mold halves. One of the latch members of each mechanism is resiliently biased in a direction that urges the platens toward each other when the latch members of each mechanism are engaged. The biasing force is preferably applied by a torsion spring common to latch members of two latch mechanisms on opposite sides of the platens. A portion of the biased member of each mechanism is constructed to extend beyond an outer face of the platen to which it is secured in a position where a clamp used to press the platens toward one another will move the biased member into a latched position and pre-load the biasing spring so that the latch mechanisms will urge the platens together after removal from the clamp.

3,768,953
CLAMPING APPARATUS FOR MOLDING MACHINE

Rodger L. Dangremond, Holland, and Donald L. Reuschel, Zeeland, both of Mich., assignors to Ex-Cell-O Corporation, Detroit, Mich.

Filed Nov. 11, 1971, Ser. No. 197,694
U.S. Cl. 425—450 6 Claims

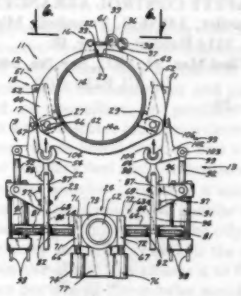


An apparatus for pressure molding or casting comprising a plurality of strain rods and having an adjustable fixed back plate mounted at one end of said rods, a fixed platen at the other end, and a movable platen slidably mounted over the rods intermediate the fixed plate and fixed platen, the movable platen and fixed plate being adapted to support the halves of a mold. A pair of cylinder and piston combinations are coaxially mounted on the adjustable fixed back plate, one arranged to provide rapid reciprocal motion of the movable platen, and the other arranged to provide a large clamping force or tonnage. Means is provided for transmitting the clamping force or tonnage to the movable platen comprising a plurality of compression or stress rods affixed at one end to the movable platen, and a rotatable lock plate mounted on the adjustable fixed back plate adapted in one rotative position to engage the free ends of the compression rods and in another to permit the stress rods to pass therethrough.

3,768,954
DEVICE FOR FORMING AND HANDLING CONCRETE PIPE

Richard P. Marsh, Vernon, and Julius C. Basso, Owasso, both of Mich.

Division of Ser. No. 829,885, June 3, 1969, Pat. No. 3,635,613.
This application Nov. 20, 1970, Ser. No. 91,514
Int. Cl. B29d *23/08*
U.S. Cl. 425—451 13 Claims



This invention relates to a device for forming and handling concrete pipe which is suitable for attachment to a vehicle having a lifting mechanism. The device comprises a concrete pipe mold formed in hingeably attachable, longitudinal sections and a mold handling apparatus, attachable to the lifting mechanism of the vehicle, for handling the mold and for stripping the mold from the concrete pipe. The mold is stripped from the concrete pipe by rotating two of the longitudinal mold sections about the hinges outwardly of the concrete pipe.

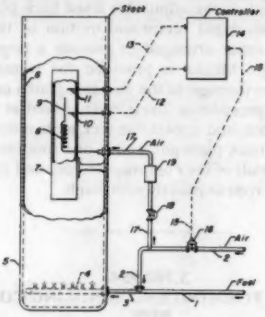
3,768,955
REACTANT RATIO CONTROL PROCESS

James H. McLaughlin, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed June 26, 1972, Ser. No. 266,089
Int. Cl. F23n *5/10, 1/02, 3/04*
U.S. Cl. 431—12 8 Claims

The ratio of the reactants fed to a continuous exothermic or endothermic reaction is controlled by measuring the thermodynamic effect caused in a second reaction zone by the addition of a small additional amount of any one reactant to the reaction products. The amount of any reaction, and subsequent temperature changes, in this second reaction zone corresponds to the deficiency of the added reactant in the ini-

tial reaction zone. The difference between the temperature of the material in this reaction zone before and after the reactant



addition is converted to an electrical signal supplied to a controller which regulates the rate of flow of the added reactant to the main reaction zone.

3,768,956

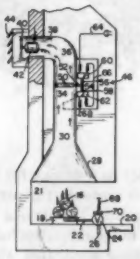
SAFETY CONTROL ARRANGEMENT

Ronald J. Mueller, 14856 S. Trumbull, Midlothian, Ill., and Verl Sinko, 3214 Halsted, Steger, Ill.

Filed Mar. 31, 1972, Ser. No. 240,194

Int. Cl. F23n *3/00*

U.S. Cl. 431—20 **8 Claims**



A safety control arrangement which is adapted for use with fuel burning appliances such as natural gas fueled fire place logs or the like, and which is responsive to draft conditions in the venting system, so that fuel flow to the burner will be cut off in the absence of predetermined air flow characteristics. The unit preferably includes a probe or detector placed in the air stream and operatively associated with a pair of switches so as to detect both lack of vacuum induced by normal draft and excessively high vacuum, indicating vent blockage upstream of the vent fan. The switches in the electrical control circuit are arranged so as to keep the fuel valve open only when a predetermined minimum draft is present, and to open the circuit when insufficient or excessive vacuum is present, regardless of the cause or location of vent blockage or restriction. In the preferred form, a parallel vacuum connection is made between the detector and the low threshold and high threshold switches, and a series electrical connection is made between the fuel valve and the normally opened and normally closed electrical switches actuated by vacuum in the vent passage.

3,768,957

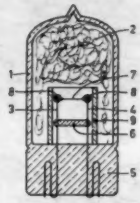
FLASH BULB

Johannes Cornelis Van Der Tas, and Charles Cornelis Eduard Meulemans, both of Emmasingel, Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 860,914, Sept. 25, 1969, abandoned. This application Sept. 21, 1971, Ser. No. 182,551

Int. Cl. F21k *5/02*

U.S. Cl. 431—95 **3 Claims**



A flash bulb of the combustible type in which at least the current conductors within the envelope are surrounded by a separate tubular body which shields the envelope walls from heat and ignition and shields the current conductors from the wire filling.

3,768,958

COMBUSTION APPARATUS FOR LIQUID FUEL

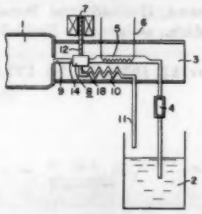
Nasatada Sakai; Akira Hara, both of Wakayama; Tamotsu Nomaguchi, Akio Ishida and Michio Fujiwara, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 10, 1972, Ser. No. 279,368

Claims priority, application Japan, Aug. 10, 1971, 46/60446; Oct. 13, 1971, 46/94396; Oct. 20, 1971, 46/83147; Mar. 31, 1972, 47/32208

Int. Cl. F23d *11/44*

U.S. Cl. 431—208 **7 Claims**

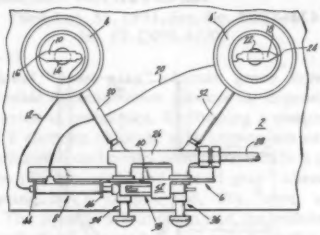


Combustion apparatus for utilizing liquid fuel having a fuel tank, a combustion air inlet, a vaporizer, a condenser, a combustion chamber, and a switching valve wherein the flow of a vaporized fuel may be recycled through the condenser for return to the fuel tank, or in the alternative, after the lapse of specific pre-heating time, the vaporized fuel may flow into the combustion chamber for initiation of the combustion process. Under recycle conditions, the flow passageways are pre-heated prior to combustion, while at the same time, heat exchange between the condensed fuel and the combustion air within the combustion air inlet permits the pre-heating of the combustion chamber per the flow of such heated combustion air.

3,768,959
AUTO-IGNITION STOVE

William J. Rohde; Carl E. Finley, both of Sycamore, and Daniel W. Lapins, De Kalb, all of Ill., assignors to Olin Corporation, New Haven, Conn.

Filed Oct. 18, 1972, Ser. No. 298,675
Int. Cl. F23q 3/00
U.S. Cl. 431—255 5 Claims

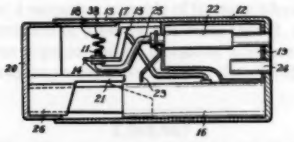


A campstove having a plurality of burners each of which is controlled by a separate regulator has, for igniting the burners, a single piezoelectric assembly. The piezoelectric assembly is actuated by a slide which is arranged to be acted upon by each of the burner regulators when the regulators are used to first cause fuel to flow to the respective burners which they control. A spark is produced at each burner upon actuation of any of the regulators to turn a particular burner on.

3,768,960
IGNITION DEVICE IN GAS LIGHTER

Nobuo Ishiguro, Tokyo, Japan, assignor to Nobuo Ishigura; Sumio Ishiguro; Yasuo Ishiguro and Kabushiki Kaisha Crown Sangyo, Tokyo-to, Japan, part interest to each

Filed May 26, 1971, Ser. No. 146,918
Claims priority, application Japan, May 29, 1970, 45/52775
Int. Cl. F23q 2/16
U.S. Cl. 431—266 4 Claims

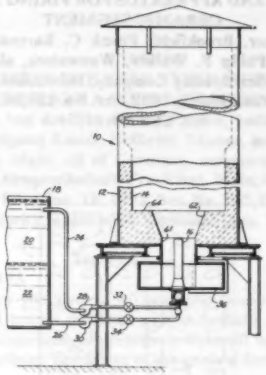


In a smoker's gas lighter wherein a momentary high potential produced by a piezo-electric element is discharged across electrodes and thereby evaporation gas spouting through a nozzle is ignited, one electrode defined by said nozzle and the other electrode making a pair with said one electrode with a spacing therefrom and the nozzle electrode is so formed in a coiled extension that a gas flow path is axially surrounded by said coiled extension. This coiled extension electrode defines a spiral inner wall which is not smooth, so that a flow of spouted gas which would be otherwise smooth is sufficiently disturbed to be diffused in ambient air and thus a sphere of diffusion enclosing said coiled extension electrode therein is established. Furthermore, this coiled extension electrode is adjustable not only with respect to its height but also with respect to the position an outer end of said coiled extension electrode occupies on the circle defined by the spiral. Such as adjustment of the coiled extension electrode enables the direction and the length of a discharge arc developing across said sphere of diffusion to be selected for the easiest ignition.

3,768,961
COMBUSTION APPARATUS

Klaus H. Hemsath, Sylvania, and Dale E. Wright, Perrysburg, both of Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio

Division of Ser. No. 193,865, Oct. 29, 1971, Pat. No. 3,718,102. This application Oct. 19, 1972, Ser. No. 299,030
Int. Cl. F23k 5/00
U.S. Cl. 431—278 4 Claims

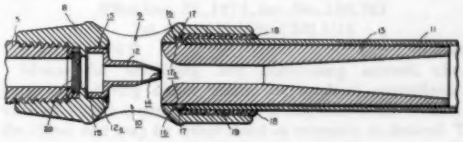


A combustion apparatus for incinerating non-homogeneous pumpable liquid wastes. A watery waste fraction and an oily waste fraction are introduced into a reaction chamber as separate aerosol streams. Combustion air and auxiliary gaseous fuel are used as propellants to produce the aerosol streams. The liquid waste injector includes a central atomizing nozzle for the watery waste liquid fraction and a surrounding annular conduit for auxiliary fuel and combustion air. Around the outside of this first annular conduit is a second annular conduit having a concentrically mounted annular nozzle at the end thereof for producing an aerosol from the oily waste liquid fraction. A high velocity gas stream contacts the oily waste as it is discharged from the nozzle and causes it to flow in a thin sheet over a surface portion of the annular nozzle to an edge thereof where it encounters a second high velocity gas stream directed perpendicularly with respect to the surface. The injector is coaxially mounted on the end of a cylindrical reaction chamber. An annular step is provided at the entrance end of the reaction chamber a short distance downstream from the injector nozzle to shield the chamber surface by preventing wall attachment of the burner flames. A helically swirling annular column of combustion air is supplied around the injector.

3,768,962
GAS TORCH

Frank Baranowski, Jr., 7 Pine Street, Lynnfield Center, Mass.

Filed Oct. 2, 1972, Ser. No. 294,440
Int. Cl. F23d 15/02
U.S. Cl. 431—353 8 Claims



Stoichiometric gas-and-air combinations promoting optimum high-temperature and centered burning in a propane

torch or the like are promoted by an air-admitting base member which fixedly mounts a gas nozzle and cooperating venturi in a critical highly-precise spaced concentric alignment which is readily achieved by way of concentrically machined nozzle and venturi seats into which the nozzle and venturi are separately forced into a predetermined centered relationship via alignment-inducing seating surfaces.

3,768,963

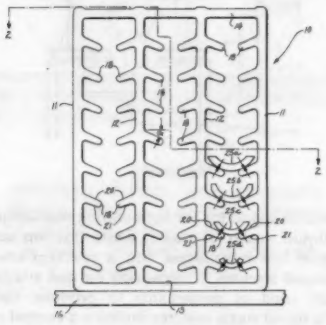
METHOD AND APPARATUS FOR FIRING ARCUATE CERAMIC SEGMENT

Paul J. Walker, Brookfield; Frank C. Barron, Menomonee Falls, and Philip F. Walker, Wauwatosa, all of Wis., assignors to Allen Bradley Company, Milwaukee, Wis.

Filed June 2, 1972, Ser. No. 259,063

Int. Cl. F27b 21/04

U.S. Cl. 432—6 **7 Claims**



A setter and method for supporting arcuately formed ceramic, and particularly ferrite, segments during kiln firing. In the preferred embodiment of the setter the segments are supported by opposed, laterally-spaced supporting shelf-like members disposed in angular planes converging downwardly towards the horizontal. The shelf-like members provide line-contact with the outer convex surface of the segment supported thereon.

3,768,964

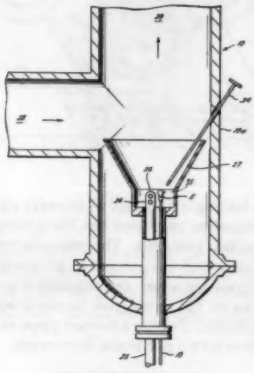
AIR HEATER

Ivan L. Smith, Port Arthur, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Nov. 22, 1971, Ser. No. 201,011

Int. Cl. F21l 9/04

U.S. Cl. 432—222 **5 Claims**



An air heater including a pilot burner comprising an orifice therein for passing a pilot gas-air fuel mixture at a higher velocity than the pilot fuel flame propagation rate, a diffuser for reducing the fuel mixture velocity to less than the flame propagation rate, and a self-contained independent pilot gas-air fuel mixture system for providing an instantaneous pilot flame having a steady burning with no flame out, the pilot burner being mounted in a main burner diffuser of the air heater.

CHEMICAL

3,768,965
ACTIVATED SINGLE BATH PEARL GRAY CHROME GREEN MINERAL DYEING AND COMPOSITION THEREFOR

Charles J. Conner, Metairie, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 31, 1971, Ser. No. 176,736
Int. Cl. C09b *61/00*
U.S. Cl. 8—17 **6 Claims**

Conventional "pearl gray" chrome green mineral dyes require a double decomposition process for depositing green chromium oxide in cellulosics. By forming a unique alkaline complex of a chromic chloride with ammonium oxalate and zirconyl ammonium carbonate, a single dye bath is produced, enabling the dyes to apply the "pearl gray" chrome green mineral dyeing by a simple pad, dry, cure, and wash procedure. The dyeings are uniform and the cellulosic is not tendered or physically degraded. Not only does this invention reduce processing steps, but it eliminates the conventional problem of tendering resulting from drying the chromic chloride on cellulosics prior to processing through a second bath of soda ash and soap. The invention makes it possible to prepare a modified chromic chloride stock solution that can be used for either the conventional "pearl gray" processing or the single bath process described above.

3,768,966
PROCESS FOR PRODUCING LACTONIZED ACRYLIC FIBERS

Yasuo Matsumura, and Kunio Maruyama, both of Okayama, Japan, assignors to Japan Exlan Company Limited

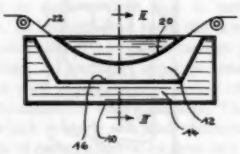
Filed Nov. 11, 1971, Ser. No. 197,936
Claims priority, application Japan, Dec. 29, 1970, 45/129275 45/129275
Int. Cl. D06m *9/00, 11/02*
U.S. Cl. 8—115.7 **10 Claims**

The present invention relates to a process for producing lactonized acrylic fibers having a high Young's modulus and improved elongation at break by treating an acrylic fiber made from an acrylic copolymer containing at least 50 percent by mol of acrylonitrile and a monomer having a hydroxyl group and/or a monomer capable of forming a hydroxyl group in an acid medium at a pH of not more than 2, said medium containing an organic and/or inorganic acid present in such concentrations as to avoid swelling or dissolving the treated material.

3,768,967
DEVICE FOR HEAT TREATMENT OF STRIPS AND THE LIKE

Hans-Ulrich Sohr, Nassau/Lahn; Reinhard Leo, Dietzenbach; Wolfgang Bachmann, and Siegfried Hermann, both of Sprendlingen, all of Germany, assignors to Hans-Ulrich Sohr, Nassau Lahn, Germany

Filed Apr. 5, 1972, Ser. No. 241,254
Int. Cl. D06c *1/00*
U.S. Cl. 8—149.1 **10 Claims**



The invention relates to a method and apparatus for heat sealing dyes in running lengths of synthetic material by traversing it into a tubular passageway of a heated receptacle and then advancing it longitudinally over a curvilinear surface area of the upper wall of said passageway. Receptacles which have plural passageways are also comtemplated for traversing the synthetic material in reverse directions to heat treat both sides thereof.

3,768,968
POLYESTER DYE WITH DYE IN METHYLENE CHLORIDE AND A CHLOROFLUOROALKANE

Hans-Ulrich van der Eltz; Walter Birke, both of Frankfurt, Main; Wolfgang Kunze, Hofheim, Taunus, and Franz Schon, Frankfurt, Main, all of Germany, assignors to Farbwerke Hoecht Aktiengesellschaft, Frankfurt, Main, Germany

Filed Jan. 18, 1972, Ser. No. 107,587
Claims priority, application Germany, Jan. 20, 1970, P 20 02 286.0
Int. Cl. D06p *1/68*
U.S. Cl. 8—175 **8 Claims**

Process for the dyeing of synthetic textile materials, by treating said textile material with a dyebath consisting of a solution or dispersion of an organic dyestuff in a halogenated methane or ethane derivative of the general formula

R — F

in which R represents the radical of the formula $FCl_2C—CFCl—$, $Cl_3C—$, $Cl_2HC—$ or $F_2ClC—CFCl—$, or in a preferably azeotropic mixture of said halogenated solvent with an alcohol, ester, ketone and/or a halogenated hydrocarbon, and then fixing the dyestuff on the textile material by the action of heat.

3,768,969
SENSITIZED TEXTILES WITH DECREASED FORMALDEHYDE ODOR

Russel M. H. Kullman, Metairie, and Robert M. Reinhardt, New Orleans, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Dec. 21, 1971, Ser. No. 210,572
Int. Cl. D06m *13/12*
U.S. Cl. 8—186 **12 Claims**

Superheated steam is utilized both to dry and remove free formaldehyde in a combined operation from textiles suitably impregnated with finishing agent and catalyst, thereby to produce a sensitized fabric with a formaldehyde odor which is imperceptible to response of the olfactory capacity of humans. The sensitized fabric of this invention can be used in the conventional post-cure process to yield durable press products.

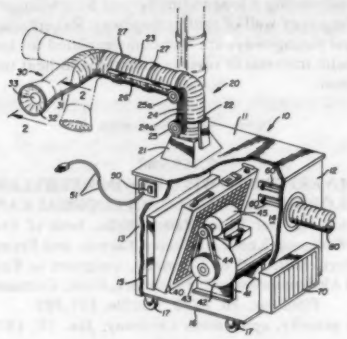
3,768,970
AIR STERILIZER AND CONTROL MEANS

Oscar Malmin, 127 E. Wayne Ave., Akron, Ohio

Filed Dec. 22, 1971, Ser. No. 210,767
Int. Cl. A61l *9/00; F24f 3/16*
U.S. Cl. 21—74 R **6 Claims**

Means for sterilizing and controlling aerosol clouds generated during either dental or medical operations. A vacuum intake is provided which is disposed in the vicinity of the cloud and may be either fixed or movable as desired. The intake is connected to a sterilizing chamber which contains filter means and ultraviolet or infrared light sources that are intended to sterilize the cloud, which is drawn into the chamber through the intake means. Exhaust means are also

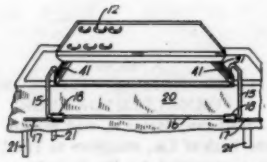
provided and may either lead to an entirely external environment or may be used to recirculate the air following its purification and sterilization back into the operating room. Disposable liners may be provided on the intake means to avoid further contamination of the operating environment.



3,768,971
COMBINATION SURGICAL INSTRUMENT TABLE AND STERILIZER BASKET

Bernice N. Fishpaw, Deland, Fla.

Filed Dec. 21, 1971, Ser. No. 210,393
Int. Cl. A61l *3/00*
U.S. Cl. 21—83 **4 Claims**



A sterilizer basket for surgical instruments which can be set up as an instrument table, with all the sterilized instruments on trays, ready for use and accessible, thus eliminating the present requirement of removing instruments from a sterilizing unit and laying them out on another table top. The invention consists of a series of perforated trays which are linked together by extendable arms so that all trays are accessible in the open condition, together with a bale for clamping the unit to the top of a stand, and for securing a sterile drape around the stand. The necessary basins are clipped to the side of the unit during sterilization.

3,768,972
METHOD OF PRODUCING CUBIC BORON NITRIDE WITH ALUMINUM CONTAINING CATALYST

Abraham Taylor, and Norman J. Doyle, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

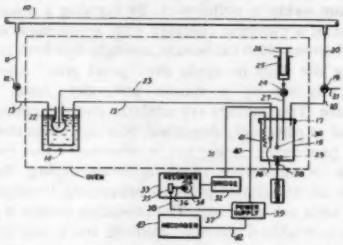
Filed May 10, 1971, Ser. No. 142,040
Int. Cl. B01d *9/00*; C01b *21/06*
U.S. Cl. 23—300 **6 Claims**

An improved method for converting boron nitride from the hexagonal to the cubic form in which powdered hexagonal boron nitride is mixed with at least one catalyst selected from the group consisting of elemental aluminum, and β-phase alloys of nickel and aluminum, and particularly NiAl, CoAl, FeNiAl, CoNiAl, CoCuAl, CuNiAl, FeNiCoAl, CuCoNiAl, and FeCoCuAl, and the mixture compressed at a pressure of from about 60 kilobars to about 85 kilobars and higher while heating to a temperature of from about 800° C to about 1600° C.

3,768,973
ENERGY COMPENSATED ENTHALPIMETER FOR PROCESS ANALYSIS

Joseph C. Wasilewski, 29 Melville Rd., Grovers Mill, R.D. No. 1, N.J.

Filed Apr. 12, 1971, Ser. No. 133,193
Int. Cl. G01n *25/48*
U.S. Cl. 23—230 R **13 Claims**

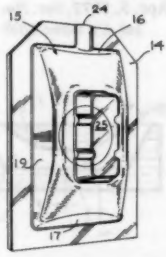


An instrument for determining the concentration of a chemical substance in a moving stream, such as the acid concentration from a metal cleaning process, or other chemical process, present in a flowing process fluid stream, which apparatus measures the heat of reaction of the flowing stream fluid by reacting an aliquot sample of it with a second fluid which is injected into said aliquot sample of the stream under process flow conditions, the instrument being enclosed in a selectively controlled environment. The temperature rise in the aliquot sample and the energy change to a compensating heater are measured with respect to elapsed time, thereby providing two gaussian curves for each aliquot. With the process fluid flushing the analytical cell continuously the net temperature change in the few minutes after reaction is completed in the analytical cell containing the aliquot sample of the process fluid is zero, a new aliquot of process fluid is in the cell, and a second analysis is performed within 1 to 2 minutes, depending on flow time and analytical cell volume.

3,768,974
DISPOSABLE COLORIMETRIC INDICATOR DEVICE FOR MEASURING THE CONCENTRATION OF CHLORINE IN WATER

Lester F. M. Storm, Glendale, Calif., assignor to Sterilizer Control Royalties, North Hollywood, Calif.

Filed Mar. 22, 1971, Ser. No. 126,956
Int. Cl. G01n *31/22*
U.S. Cl. 23—253 R **6 Claims**



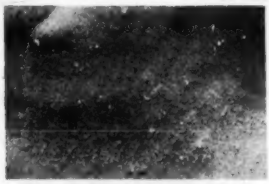
A disposable plastic syringe contains a measured quantity of a water-soluble colorimetric reagent composition propor-

tioned to the volume of water sample which may be drawn into the syringe. The color produced in the water sample is compared to a chart standard which indicates the concentration of chlorine in the water sample. The measured quantity of the reagent composition is preferably applied as a dried printed spot applied to an inside surface of the syringe device.

3,768,975
HYDROGEN DETECTION MEANS

Stephen M. Toy, Orange, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed July 9, 1971, Ser. No. 161,133
Int. Cl. G01n *31/22*
U.S. Cl. 23—253 TP **11 Claims**

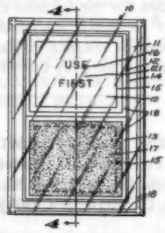


A substrate having a thin layer of rare earth metal applied thereon. The substrate can be applied to a specimen with the rare earth layer held in contact thereagainst so that hydrogen in the specimen can react with the rare earth metal to form a rare earth hydride. Examination of the reacted tape enables calculation of the amount of hydrogen in the specimen and the locating of hydrogen concentrations that may exist therein.

3,768,976
TEMPERATURE-TIME INTEGRATING INDICATOR

Kwoh H. Hu, Weston, and Joseph D. Loconti, Natick, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 20, 1971, Ser. No. 145,146
Int. Cl. G01m *31/00*
U.S. Cl. 23—254 R **9 Claims**

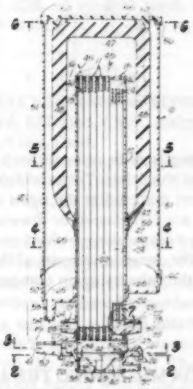


A temperature-time integrating indicator for determining the safe limit of storage of a food product or other material which is subject to deterioration due to temperature and length of storage. In its preferred form the temperature-time integrating indicator comprises a transparent polymeric film package containing a warning message enclosed in the package together with an aqueous solution of a redox dye, e.g., sodium anthraquinone beta-sulfonate. The dye is in its reduced state, which is dark red and obscures the warning message. The rate of permeation of oxygen into the package is a function of the temperature at which the package is exposed to the atmospheric environment. When sufficient time has elapsed at temperatures which may vary, the due becomes oxidized, turning colorless and revealing the warning message. The effects of temperature and time on the migration of oxygen through the polymeric film followed by reaction of the oxygen with the redox dye in the solution are integrated. This is related to product deterioration in storage, since the rate of this deterioration also depends on the temperature history and the time of storage. The use or disposal of stored foods and the like may be scheduled in accordance with warnings provided by the temperature-time integrating indicators.

3,768,977
INTEGRAL BLOOD OXYGENATOR AND HEAT EXCHANGER

Robert C. Brumfield, 73 Emerald Bay, Laguna Beach, Calif., and Alton V. Hooper, Costa Mesa, Calif., assignors to said Robert C. Brumfield, by said Alton V. Hooper

Filed Mar. 31, 1972, Ser. No. 240,054
Int. Cl. A61m *1/03*
U.S. Cl. 23—258.5 **3 Claims**



An integral blood oxygenator and blood temperature controller combination concurrently provides blood oxygenation at a precise blood-gas temperature required by a patient. The integral combination operationally insures that the extra-corporeal circulating blood is equilibrated with oxygen gas at a patient's required blood temperature. Multiple, small diameter aperture, equal length oxygen exchange tubes are adjacently spaced in a patterned, parallel array and secured at the pairs of tube terminus in an opposed pair of tube header plates, forming a blood-gas-energy exchange tube array. The two-phase blood-oxygen-gas mixture flows upward inside each of the single oxygen exchange tubes, absorbing oxygen and evolving carbon dioxide gas. Precisely temperature controlled water circulates through the gas exchange tube array around the exterior of the oxygen exchange tubes, providing precise blood temperature control during oxygenation process. By equilibrating oxygen consumption and carbon dioxide evolution at a precise blood temperature, undesired gas bubble evolution at higher random blood temperature excursions are minimized, lowering the potentiality of gas bubble evolution and gas embolism.

3,768,978
DISPOSABLE PIPETTE

John J. Grubb, La Habra, and Keichi Tomei, Monterey Park, both of Calif., assignors to Hamilton Company, Whittier, Calif.

Filed Mar. 1, 1971, Ser. No. 119,784
Int. Cl. G01n *1/14, 1/06*
U.S. Cl. 23—259 **9 Claims**

Apparatus into which fluids are taken and which comprises transparent resilient plastic tubes, or straws, of substantially uniform inside diameter and within which are disposed re-

agent matrixes, or chemically impregnated reagent or indicator strips, for absorbing and/or holding color reactions for visual or photometric interpretation or analysis.

Liquid samples are introduced into the tube, which may be termed a straw, so the liquid samples come into contact with ends of the reagent materials, which then absorb and/or hold color reactions for visual or photometric interpretation or analysis.

The tubes or straws may be open at both ends, or closed at one end and open at the other. Tubes which are closed at one end have the reagent material at the open end of such tubes, and liquid samples are introduced or drawn into the tubes by suction effected by compressing a short section of the tubes and then releasing the compressed part of the tube. The liquid is discharged from the tube by again compressing a section of the tube.

3,768,979

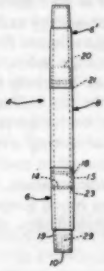
APPARATUS FOR MEASURING THE AMOUNT OF A COMPONENT IN A BIOLOGICAL FLUID

Louis W. Mead, Lexington, and Marshall E. Deutsch, Sudbury, both of Mass., assignors to Sherrod Drywall, Inc., Miami, Fla.

Division of Ser. No. 43,488, June 4, 1970, Pat. No. 3,721,528. This application Oct. 4, 1971, Ser. No. 186,536

Int. Cl. G01n *23/00, 33/16*

U.S. Cl. 23—259 **2 Claims**



An improved mode of preparing certain reagents utilized in the measurement of components of biological fluids. In the general mode contemplated, there is added to the biological fluid, which normally contain a binder (i.e. a protein) capable of binding the component to be measured, a combination of a component essentially similar to that which is to be measured as present in the biological fluid but modified to act as a tracer (by reason of its optical or radio-active properties) and an adsorbent. The tracer modified component is added in an amount greater than that capable of being bound by the binder present in the fluid. The adsorbent material is added to remove the unbound components, the adsorbent removed, and the amount of tracer in the liquid phase measured.

The improvements comprise the use of a milder adsorbent then theretofore used and a modification in the construction of the vials to carry out the measurements.

3,768,980

FURNACE DESIGN

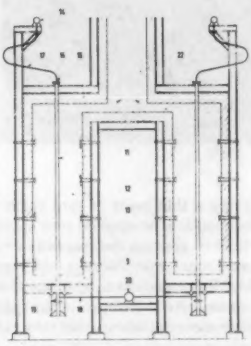
Per Heymann Andersen, Virum, Denmark, assignor to Haldor Frederik Axel Topsoe, Vedbaek, Denmark

Filed Sept. 16, 1971, Ser. No. 181,115

Claims priority, application Great Britain, Sept. 25, 1970, 45,882/70

Int. Cl. B01g *9/04*; **F22b** *37/24*

U.S. Cl. 23—288 M **8 Claims**



A furnace for catalytic, endothermic reactions comprising at least one row of substantially vertical reactor tubes in at least one furnace chamber, inlet pigtails compensating for thermal expansions of the reactor tubes, outlet means including at least substantially straight connecting pipes forming substantially right angles with said reactor tubes, and suspension means of said reactor tubes, said means being disposed at the lower end of said reactor tubes allowing a substantially frictionless movement of the lower ends of said reactor tubes in all directions within a substantially horizontal plane large enough to compensate for the thermal expansions of said outlet means in order to make the structure of the furnace chamber independent of thermal expansions of the reactor tubes and simultaneously simplify the outlet piping means.

3,768,981

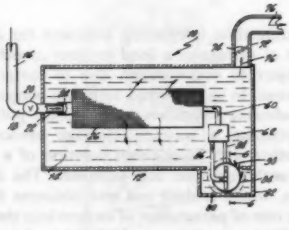
AUTO EXHAUST SCRUBBER WITH CATALYST

Howard Alliger, 10 Ponderosa Dr., Melville, L. I., N.Y.

Filed Feb. 16, 1971, Ser. No. 115,397

Int. Cl. F01n *3/14*; **B01j** *9/04*

U.S. Cl. 23—288 F **3 Claims**



A gas scrubber for an internal combustion engine comprising a tank having an intake gas tube to which a composite

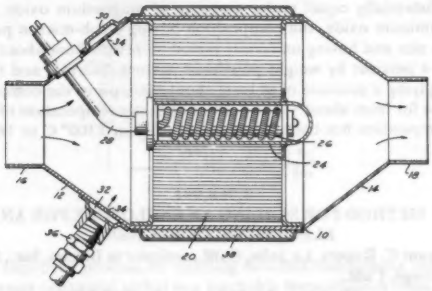
cylindrical filter formed of a plurality of screens is secured. A clean gas outlet is provided at the top of the tank and a pump is provided in the tank for pumping scrubbing liquid from the interior of the tank back into the filter so that the gas to be scrubbed mixes with the scrubbing liquid and passes through the filter with the scrubbing liquid.

3,768,982

CATALYTIC CONVERTER WITH ELECTRICALLY PREHEATED CATALYST

Ernest W. Kitzner, Allen Park; Alex Rhodes, Detroit, and Moses Schachter, Oak Park, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 22, 1971, Ser. No. 155,550
Int. Cl. B01j 9/04; F01n 3/14
U.S. Cl. 23—288 F **1 Claim**



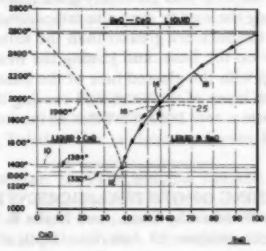
Heat from an electric heater is transferred conductively through a monolithic support to a catalyst located on the surfaces of the monolithic support. Engine exhaust gases passing through the monolithic support contact the heated catalyst, which assists in converting undesirable components of the exhaust gases into less harmful components. Supplemental air is supplied to the exhaust gases from an annular distributing space located at the converter inlet.

3,768,983

SINGLE CRYSTAL BERYLLIUM OXIDE GROWTH FROM CALCIUM OXIDE-BERYLLIUM OXIDE MELTS

Perry E. Elkins, Santa Ana, and Stanley B. Austerman, Villa Park, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Nov. 3, 1971, Ser. No. 195,365
Int. Cl. B01j 17/20
U.S. Cl. 23—301 SP **8 Claims**



A process for growing large single crystals substantially free of surface inclusions within several days is disclosed. This process involves the concept of promoting further growth on seed crystals from a melt composition of suitable oxides which will form a eutectic. Growth occurs as the crystal seed is rotated and pulled slowly from the melt composition. The temperature decrease of said melt is such that the temperature can be defined by the liquidus curve of the melt composition phase diagram. Growing single crystal beryllium oxide at a temperature of about 1,980° C from a melt composition having 56 weight percent beryllium oxide and 44 weight percent calcium oxide is an example of this process.

3,768,984

WELDING RODS

James L. Foster, Jr., Ligonier Twp., Westmoreland County, Pa., assignor to Eugene F. Buell

Filed Apr. 3, 1972, Ser. No. 240,818
Int. Cl. B22f 3/00
U.S. Cl. 29—182.8 **6 Claims**

A gas applied carbide weld rod is provided which is made up of a mild steel tube filled with a mixture of about 65 to 70% of 20–60 mesh W_2C, about 20% to 25% of 80–200 mesh Macro WC, about 9% to 12% of 80–200 mesh Sintered WC and about 1.0% to 1.5% of flux.

3,768,985

LIQUID INTERFACE DIFFUSION BONDED TITANIUM

James R. Woodward, El Cajon, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Continuation-in-part of Ser. No. 765,156, Oct. 4, 1968. This application Dec. 29, 1969, Ser. No. 888,501
Int. Cl. B32b 3/12
U.S. Cl. 29—191 **1 Claim**

Fitted titanium members or articles are joined, face to fitted face, by a diffusion bonding process in which a small amount of brazing type material is interposed between said faces, which material, when rendered liquidus by heat, forms between the faying surfaces a liquid interface and resultant diffusion bridge which accelerates atomic diffusion of the basis materials across the bonded joint. The bonding cycle includes an initial period during which the interface material is rendered liquidus, followed by a diffusion period during which atomic diffusion occurs across the bridge provided by the interface material. The resultant bonded joint is characterized by atomic mixing and grain growth of the basis materials across the joint, and diffusion and dilution of the interface materials with the basis materials in the region of the joint.

3,768,986

LAMINATED LEAD FRAME AND METHOD OF PRODUCING SAME

Richard Ramos, Santa Ana, and Roger E. Haas, both of c/o Micro Science Associates, Fountain Valley, Calif.

Filed Oct. 8, 1971, Ser. No. 187,728
Int. Cl. H01l 1/14
U.S. Cl. 29—191.6 **11 Claims**

A lead frame structure for a semiconductive device package is fabricated by laminating two preformed thin sheets, the lower sheet having a fully developed set of closely spaced inner lead tips and the upper sheet having leads which terminate short of the tips. The laminated lead frame has the thickness required for handling, assembly and use. The cavity formed by the foreshortened lead tips of the upper sheet is adopted to contain beam-lead or flip-chip devices bonded directly to the lead tips of the lower sheet. The very thin lower sheet makes possible closer lead spacing than was heretofore possible with either photoetching or stamping techniques.

3,768,987

FORMATION OF CHROMIUM-CONTAINING COATINGS ON STEEL STRIP

Julius V. D. Forstmann, Allentown, and Richard M. Willison, Bethlehem, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 777,550, Nov. 18, 1968, Pat. No. 3,623,901. This application Apr. 5, 1971, Ser. No. 131,302The portion of the term of this patent subsequent to Nov. 30, 1988, has been disclaimed.

Int. Cl. B24b 2/02

U.S. Cl. 29—196.1 2 Claims

A stainless steel clad sheet material having a bright, or reflective, surface coating on one side and a matte, or dull, surface coating on the opposite side is formed by a gas diffusion type heat treatment of an arrangement of blanks consisting of ferrous sheets having a single surface coated with a chromium containing powder. Each side of the finally coated sheet material will have a substantially equal coating of dense, pore free stainless steel material overlain on the matte surface coating side by a somewhat porous layer of stainless steel material.

3,768,988

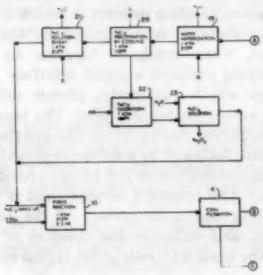
REMOVAL OF PYRITIC SULFUR FROM COAL USING SOLUTIONS CONTAINING FERRIC IONS

Robert A. Meyers, Encino, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 116,262, Feb. 17, 1971, abandoned. This application July 19, 1971, Ser. No. 163,893

Int. Cl. C01l 9/00

U.S. Cl. 44—1 R 19 Claims



Finely divided coal or solid coal derivatives containing pyrite are reacted with a ferric ion solution; $FeCl_3$ is particularly suitable. The ferric ion is reduced to ferrous ion and free sulfur is formed. The solution is then filtered from the coal which is then washed and heat dried under low pressure. Most of the free sulfur is volatized from the coal due to the heat drying; additional free sulfur can be removed by additional washing and heat drying and/or solvent extraction techniques. At least 60 percent of the pyrite sulfur and pyrite iron is removed using the process of this invention. If desired, the ferrous chloride can be regenerated; this permits iron oxide to be recovered as a byproduct.

3,768,989

PROCESS FOR THE PREPARATION OF A RARE EARTH OXIDE POLISHING COMPOSITION

Nicholas J. Goetzinger, 703 East St., and Walter L. Silvernail, 140 E. Stimmel St., both of Chicago, Ill.

Division of Ser. No. 767,556, Aug. 19, 1968, Pat. No. 3,573,886, Division of Ser. No. 476,753, Aug. 2, 1965, abandoned. This application Sept. 24, 1970, Ser. No. 75,271

Int. Cl. B24d 3/02

U.S. Cl. 51—309 6 Claims

The Preparation of a rare earth oxide polishing composition by forming a rare earth carbonate-wollastonite precipitate in an aqueous admixture, separating the basic carbonate-wollastonite precipitate from the aqueous admixture and calcining the precipitate to produce an extended rare earth oxide polishing composition.

3,768,990

METHOD FOR MAKING HEAT RESISTANT TRANSPARENT OPTICAL ELEMENTS

David J. Sellers, Watertown, Mass., and Donald W. Roy, Golden, Colo., assignors to Coors Porcelain Company, Golden, Colo.

Continuation-in-part of Ser. No. 69,506, Sept. 3, 1970, abandoned. This application Aug. 25, 1972, Ser. No. 283,873

Int. Cl. C03b 23/20, , 35/04

U.S. Cl. 65—18 4 Claims

In accordance with the invention a high temperature resistant optical element having transparency in the visible and infrared wave length regions of the electromagnetic spectrum is manufactured by heating to a temperature of from about 800° C to 1,250° C, in a vacuum, a composition containing substantially equal molar amounts of magnesium oxide and aluminum oxide, the composition having a sub-micron particle size and having uniformly mixed therewith from about 0.2 to 4 percent by weight powdered lithium fluoride, and then applying a pressure of at least about 8000 psi to the composition for from about 1/2 to 3 hours after the temperature of the composition has been raised to about from 1300° C to 1600° C.

3,768,991

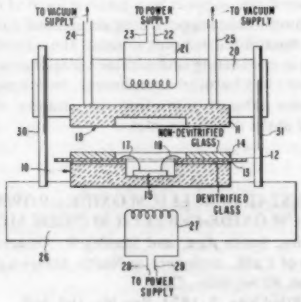
METHOD FOR SEALING AN ENCLOSURE FOR AN ELECTRONIC COMPONENT

Bryant C. Rogers, La Jolla, Calif., assignor to Diacon, Inc., San Diego, Calif.

Filed June 14, 1972, Ser. No. 262,798

Int. Cl. C03c 27/02

U.S. Cl. 65—36 4 Claims



A method for sealing an enclosure for an electronic component, the enclosure including a base having on one face a composite glass layer, and a cap having a face to be joined with the base which is free from any glass layer. The method includes heating the cap to raise the temperature of its glass-free face to a temperature greater than the softening point of the glass layer on the base, and joining the heated glass-free face of the cap with the glassed face of the base, thereby softening the glass layer of the base, and cooling the joined cap and base to form a seal between them at the interface of the joined faces.

3,768,992

TOUGHENING OF OPHTHALMIC LENS BLANKS

Emil W. Deeg, Woodstock, Conn., and Leslie B. Martel, Sturbridge, Mass., assignor to American Optical Corporation, Southridge, Mass.

Filed Feb. 22, 1971, Ser. No. 117,820

Int. Cl. C03b 27/00

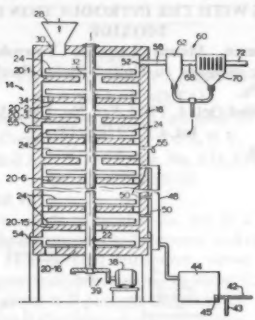
U.S. Cl. 65—116 4 Claims

Impact resistance of lenses treated according to the invention is increased by quenching in a molten metal under a non-oxidizing or slightly reducing atmosphere.

3,768,993
METHOD FOR REDUCTION ROASTING NICKELIFEROUS LATERITE ORES

Donald Robert Weir; Dennis G. Maschmeyer, both of Fort Saskatchewan, and William J. Lavender, Edmonton, Alberta, all of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

Filed June 11, 1971, Ser. No. 152,233
Int. Cl. C22b *1/26*
U.S. Cl. 75—1 **11 Claims**



An improved process for roasting nickeliferous laterite ore to convert contained nickel to a leachable form wherein roasting is effected in a multiple hearth type furnace under conditions which are specifically controlled in three basic respects to substantially increase furnace throughput while maintaining a high conversion of contained nickel to a form in which it is extractable by leaching in aqueous solution. Firstly, the ore fed to the furnace is maintained continuously under reducing conditions once it has been heated above the temperature at which the water of hydration begins to be removed; secondly, the hydrogen content of the reducing gases contacting the ore within the furnace is regulated to provide very strongly reducing conditions in about the last half of the "reduction zone" of the furnace; thirdly, the ore bed depth on the furnace hearths is regulated in relation to the ore residence time in the furnace to ensure that there is sufficient time on each hearth for hydrogen gas to penetrate the major portion of the depth of the ore bed by diffusion.

As a secondary feature of the process, conversion of nickel to leachable form at greatly increased furnace capacities is further optimized by careful control of the temperature and heat-up rate of the ore within the furnace. According to still another optional modification, control of ore temperature and heatup rate are facilitated and optimum utilization of fuel used for roasting is obtained by injecting free-oxygen-bearing gas into the upper portion of the furnace to burn excess reductant.

3,768,994
GOLD POWDER

Vaidis R. Daiga, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

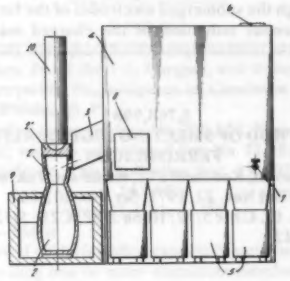
Filed Mar. 15, 1971, Ser. No. 124,558
Int. Cl. C22b *11/04*
U.S. Cl. 75—0.5 A **16 Claims**

Gold powder useful in the formation of thick film microelectronic circuitry is formed by dissolving a gold bearing material in aqua regia, thereafter adding to the solution so formed a sufficient amount of an emulsifying agent or a particle size inhibitor such that upon precipitation of the gold from the solution, the average particle size of the precipitate will be less than about 20 microns, and thereafter adding, in a rapid fashion, a precipitating agent to the solution in an amount sufficient to precipitate the gold from the solution. The freshly formed gold particles are encapsulated with the emulsifier and a powder formed. By using the described tenchinque, the powder so formed, after washing and drying, generally has a bulk density of greater than about 5.0 grams per cc. and each of the fine particles of gold have a coating of the emulsifying agent that acts as a lubricant when used with an organic binder in a thick film printing formulation.

3,768,995
PROCEDURE FOR MANUFACTURING HIGH QUALITY ZINC POWDER

Tomas Perez Calleja, S. Gervasio s/n (Vellaverde bajo), Madrid, Spain

Filed May 10, 1971, Ser. No. 141,770
Claims priority, application Spain, May 18, 1970, 379,780
Int. Cl. B22f *9/00*
U.S. Cl. 75—0.5 B **1 Claim**



A method of manufacturing high quality zinc powder in an independent grouping of small modular components, each having a combination oven and condensation chamber. There is a melting crucible and a retort or zinc vaporizing crucible inside the oven and the condensation chamber has several independent deposits in the lower area where condensed zinc particles settle and are later collected. A device in the condensation chamber acts as a safety valve which eliminates the risk of explosion when an abnormal reaction occurs inside the chamber. A device in the condensation chamber functions as a cleanser for zinc oxide to control not very violent abnormal reactions. A filtering device can be installed between the steaming retort or crucible and the condensation chamber which eliminates impurities in the zinc utilized.

3,768,996
GRANULAR ADDITIVE FOR ELECTROREFINING OF STEEL

Paul Metz, Luxembourg, Luxembourg, assignor to ARBED Acierie Reunies de Burbach-Eich-Dudelange, de la Liberte, Luxembourg, Luxembourg

Filed July 12, 1971, Ser. No. 161,957
Claims priority, application Luxembourg, July 10, 1970, 61306; Sept. 25, 1970, 61766
Int. Cl. C22d *7/06*; C22b *9/10*; C22c *33/00*
U.S. Cl. 75—10 R **7 Claims**

Slag recovered from a previous electroslag remelting of a metal or similar thereto is dried and ground into a fine powder and then mixed with a metal to be added to an electroslag melt, e.g., of steel, in order to alloy it or deoxidize it. The mixture is formed into granules having a density closer to that of the slag than to that of the metallic component from which the granules were formed. These granules can even be lighter than the slag in the melt, so that when added they float thereon. Thus, when the granules are charged onto the melt they spend a relatively long time in contact with the relatively hot slag so that their nonmetallic component is absorbed into the slag while their metallic component is slowly released and thereby

afforded sufficient time to heat up and react with the slag or to melt completely before passing into the body of molten metal udner the slag.

3,768,997
PROCESS FOR PRODUCING LOW CARBON SILICOMANGANESE

Norman G. Bliss, and Robert T. Wright, both of Kingston, Tenn., assignors to The Mead Corporation, Dayton, Ohio

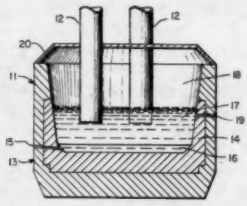
Filed May 22, 1972, Ser. No. 255,777
Int. Cl. C22d *7/06*
U.S. Cl. 75—10 R **12 Claims**

Low carbon silicomanganese produced by introducing into a slag free, submerged arc electric furnace charge materials comprising a mixture of gravel, ferromanganese fines, low alloy steel, coal, coke and wood chips in proportions to obtain an alloy composition of about 50 to 65 percent manganese, 20 to 31 percent silicon, 0.05 to 0.80 percent carbon, 0.10 to 0.20 percent phosphorus, a maximum of about 0.05 percent sulfur and the balance essentially iron. An electric current is passed through the submerged electrodes of the furnace to obtain carbonaceous reduction of the charged materials and molten metal is removed periodically adjacent the bottom of the furnace.

3,768,998
METHOD OF SMELTING HIGH QUALITY FERROSILICON

Jutaro Yonemochi, Koadachi 171, Kome-shi, Tokyo, Japan

Filed Nov. 22, 1971, Ser. No. 201,007
Int. Cl. C21c *5/52;* **H05b** *3/62;* **C21c** *5/52*
U.S. Cl. 75—12 **6 Claims**

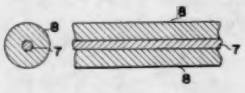


An electric furnace operating as a pure resistance furnace in which molten slag layers are retained, carbon is immersed in said slag layers, and raw material is held on the upper portion thereof, immersing its lower portion into the slag layers, whereby direct reducing and indirect reducing (gas reduction) are effected continuously.

3,768,999
COATED WIRE FEEDING TECHNIQUE FOR MAKING ADDITION OF COMPONENTS TO MOLTEN METALS

Masuta Ohkubo; Ryoichiro Imai, and Akira Masui, all of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 867,758, Oct. 20, 1969, abandoned. This application June 9, 1971, Ser. No. 151,523
Claims priority, application Japan, Oct. 23, 1968, 43/76780
Int. Cl. C22c *9/00, 33/00*
U.S. Cl. 75—58 **9 Claims**

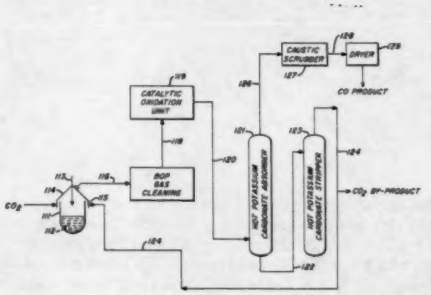


The invention relates to the addition of components such as deoxidizing agents, alloying elements and the like to molten metals, particularly molten steel. This is accomplished according to the invention by feeding a wire rod into the molten metal, the wire rod carrying thereon additive components for the molten metal and an organic binder which is not harmful to the molten metal and which decomposes to gaseous products in the molten metal so that the generated gas stirs the molten metal and thus uniformly incorporates the added components throughout the molten metal.

3,769,000
METHOD FOR OPERATING BASIC OXYGEN STEEL PROCESSES WITH THE INTRODUCTION OF CARBON DIOXIDE

Donald Glassman, Mount Lebanon Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 4, 1971, Ser. No. 186,131
Int. Cl. C21c *5/38*
U.S. Cl. 75—60 **2 Claims**



This invention relates to a method of making steel by the basic oxygen process in which carbon dioxide is injected to form a curtain against the intrusion of atmospheric oxygen and nitrogen and in which high purity carbon monoxide may be recovered from the basic oxygen process off-gases.

3,769,001
METALLURGICAL PROCESS FOR RECOVERING ALUMINUM FROM ALUMINUM SCRAP

Alex R. Valdo, and Currie B. Berry, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed May 3, 1971, Ser. No. 139,854
Int. Cl. C22b *21/06*
U.S. Cl. 75—68 R **2 Claims**

A method of recovering aluminum from foamed aluminum utilizing an initial heel of molten aluminum, heavy fluxing with a mixture of sodium chloride, potassium chloride and cryolite, and submersion of the foamed aluminum in the molten aluminum.

3,769,002
REDUCTION OF NICKEL AND COBALT OXIDES IN A MOLTEN METAL BATH OF CONTROLLED OXYGEN CONTENT

Charles Edward O'Neill, Port Credit, Ontario; John Stuart Warner, and Malcolm Charles Evert Bell, both of Oakville, Ontario, all of Canada, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed June 21, 1971, Ser. No. 155,354
Claims priority, application Canada, July 8, 1970, 87698
Int. Cl. C22b *23/00*
U.S. Cl. 75—82 **24 Claims**

Metal oxides, including oxides of nickel and cobalt and compounds heat decomposable thereto, and a carbonaceous reductant are introduced into a turbulent bath of the cor-

responding metal which bath contains at least about 0.01 percent dissolved oxygen to maintain the dissolved oxygen content of the bath at at least about 0.01 percent but less than saturation, while the carbonaceous reductant reacts to generate carbon monoxide. The metal bath is maintained in the molten state by burning above the bath carbon monoxide generated in situ and hydrocarbon fuels with an excess of free oxygen. Impurities oxidizable to volatile oxides can be eliminated by subjecting the oxygen-containing bath, or a part thereof, to subatmospheric pressures, or the metal bath can be surface blown with a free oxygen-containing gas to adjust the oxygen content of the bath before subatmospheric treatment.

3,769,003

ALLOY STEEL PARTICULARLY ADAPTABLE FOR USE AS A FILLER METAL

Norman Kenyon, Sloatsburg, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Apr. 5, 1971, Ser. No. 131,510
Int. Cl. C22c *39/20*
U.S. Cl. 75—128 W **5 Claims**

An alloy particularly adaptable for use as a welding filler wire contains from 4 percent to 8 percent nickel, about 5 percent to about 11.5 percent chromium, about 1 percent to about 3.75 percent molybdenum, up to about 0.5 percent aluminum, up to about 0.3 percent titanium, up to about 0.03 percent carbon and the balance essentially iron. The alloys are also useful for structural and other applications.

3,769,004

METHOD OF PRODUCING A KILLED STEEL

Lyall F. Barnhardt, Center Valley, and Bruce C. Whitmore, Bethlehem, both of Pa., assignors to John I. Iverson, Bethlehem, Pa.

Filed May 10, 1971, Ser. No. 141,932
Int. Cl. C22c *1/06*
U.S. Cl. 75—129 **4 Claims**

A method of producing a fully killed steel of low aluminum content and substantially free of aluminum oxides, without the need for the addition of other metallic or carbidic deoxidizers such as silicon, titanium, silicon carbide, carbon, etc. The steel is produced by the addition of aluminum to molten steel in an amount sufficient to kill the steel and provide a dissolved aluminum content in the order of between 0.03 to 0.06 percent. The steel is then stirred at a controlled rate in contact with an oxidizing slag until the amount of dissolved aluminum remaining in the steel is between 0.005 percent and 0.020 percent. The steel thus produced retains the mode of solidification of a killed steel, is low in dissolved oxygen and aluminum rich oxides, and is especially suitable for continuous casting in that it can be poured through relatively small diameter nozzles without plugging.

3,769,005

COPPER NICKEL ALLOYS

William Henry Richardson, Datchet; Douglas Brown, Slough, and Prodyot Guha, High Wycombe, all of England, assignors to Langley Alloys Limited, Slough, Buckinghamshire, England

Continuation-in-part of Ser. No. 784,024, Dec. 12, 1968, abandoned. This application July 7, 1971, Ser. No. 160,531
Int. Cl. C22c *9/06*
U.S. Cl. 75—159 **1 Claim**

A high quality, high strength, highly ductile, castable, weldable and corrosion resistant Copper alloy consisting of the following elements in the following proportions by weight :

Nickel 9% – 18%
Aluminium 1% – 3.5%
Manganese 8.5% – 13%
Iron 2.5% – 6.5%
Chromium 0% – 1%
Copper the balance

with the Aluminium, Manganese and Nickel contents being so controlled that they satisfy the following formulae :

a. $4 \times Al\% + Mn\% = 14\% - 20\%$
b. $4 \times Al\% + Ni\% = 17\% - 25\%$
c. $Ni\%/5Al\% =$ Greater than 1

3,769,006

BRIGHT CAST ALLOY, AND COMPOSITION

Clyde E. Ingersoll, Tonawanda, N.Y., assignor to Williams Gold Refining Company Incorporated,, Buffalo, N.Y.

Filed Jan. 27, 1972, Ser. No. 221,432
Int. Cl. C22c *5/00*
U.S. Cl. 75—165 **6 Claims**

An improved gold alloy casting composition wherein sufficient aluminum and/or silicon is utilized in an amount sufficient to form a lustrous oxidation resistant surface coating during and after casting, the method of casting utilizing these components and the cast product. In addition a de-oxidant may also be utilized.

3,769,007

LEAD-BISMUTH ALLOY FOR SOLDERING ALUMINUM

John J. Stokes, Jr.; Robert A. Cargnel, and Robert C. Geiger, all of Murrysville, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 200,855, Nov. 22, 1971, abandoned, which is a division of Ser. No. 71,281, Sept. 10, 1970, abandoned. This application Apr. 13, 1972, Ser. No. 243,853
Int. Cl. C22c *11/00*
U.S. Cl. 75—166 B **18 Claims**

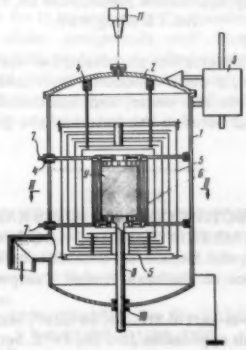
An improved soldering alloy especially suitable for soldered joints comprising one or more aluminum members has a base containing lead and bismuth to which is added a small amount of silver or indium. The solder alloy has a low melting point of typically less than 480°F together with very good corrosion resistance. The alloy can also contain relatively small amounts of tin, zinc and antimony.

3,769,008

METHOD FOR SINTERING WORKPIECES OF PRESSED POWDERED REFRACTORY METAL OR ALLOY AND VACUUM FURNACE FOR PERFORMING THE SAME

Boris Alexandrovich Borok; Zhan Iosifovich Dzneladze; Leonid Nikolaevich Petrov; Evgeny Ivanovich Zaikin; Ivan Alexeevich Kiyansky, and Boris Pavlovich Lobashov, all of Moscow, U.S.S.R.

Filed May 19, 1971, Ser. No. 144,719
Int. Cl. B22f *1/00*; B23k *9/00*; H01i *37/26*
U.S. Cl. 75—225 **3 Claims**



A method for sintering workpieces of a pressed powdered refractory metal in vacuum. The method envisages simultane-

ous heating of the workpiece by electron bombardment over its entire surface. The workpiece to be treated is heated to a temperature which makes from 10 to 15 per cent of its material melting temperature and is at such temperature till gases cease to evolve therefrom.

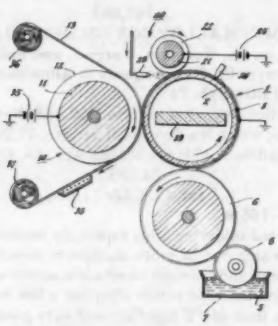
A vacuum furnace for performing the method has a heater made as a cathode surrounding the entire surface of the workpiece to be treated and placed at a uniform distance from the workpiece.

3,769,009

INKING SYSTEM FOR LIQUID PARTICLE MIGRATION ON AUTOMATIC MACHINES

John B. Wells, Rochester, and Robert H. Townsend, Webster, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,774
Int. Cl. G03g *13/14, 13/22*
U.S. Cl. 96—1 R **8 Claims**



An improved photoelectrophoretic imaging process is provided comprising adding sufficient additional insulating carrier liquid to the imaging suspension to maintain the concentration of said suspension substantially constant during the period of contact with an absorbent copy web.

3,769,010

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER

Hiroshi Hanada, Yokohama; Nobuo Kitajima, and Tatsuo Masaki, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed June 15, 1971, Ser. No. 153,354
Claims priority, application Japan, June 20, 1970, 45/53956
Int. Cl. G03g *5/04*
U.S. Cl. 96—1.5 **2 Claims**

An electrophotographic photosensitive member is composed of a base, a photoconductor layer and an insulating layer laminated in this order, and additionally a rectifying layer is provided between the base and the photoconductor layer.

3,769,011

PHOTOCONDUCTIVE COMPOSITIONS AND ELEMENTS CONTAINING METHINE DYE IN J-AGGREGATE STATE

Paul B. Gilman, and Donald W. Heseltine, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 804,267, March 4, 1969, abandoned. This application Jan. 26, 1972, Ser. No. 221,037
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.6 **17 Claims**

Organic photoconductive compositions containing a methine dye present in the J-aggregated state and which spectrally respond primarily in the J-band are described. The resultant compositions can be used as photoconductors or as sensitizers for other photoconductors.

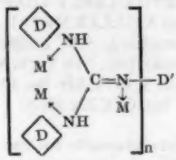
3,769,012

IMAGING METHOD AND MATERIALS

James E. Young, 50 Larchwood Dr., Pittsford, N.Y.

Continuation-in-part of Ser. No. 52,981, July 7, 1970, abandoned. This application May 26, 1972, Ser. No. 257,289
Int. Cl. G03c *5/24*
U.S. Cl. 96—48 R **8 Claims**

Imaging methodology and materials are disclosed utilizing cyanine dye coordinate structures of the type:



where M is a heavy metal ion, and D and preferably D′ are photographic developer structures. Actinic radiation for the said coordinate structures reduces the metal ions and partially oxidizes the fragments D, D′, whereby image development of members sensitized with said coordinate structures can be effected by chemically disrupting the NH–C bonds.

3,769,013

WET TYPE DIAZOTYPE DEVELOPER

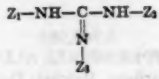
Taizo Yokoyama, Osaka, Japan, assignor to Mita Industrial Company Limited, Osaka, Japan

Division of Ser. No. 847,702, Aug. 5, 1969, Pat. No. 3,679,420. This application July 2, 1971, Ser. No. 159,506
Claims priority, application Japan, Aug. 7, 1968, 43/55677
Int. Cl. G03c *5/34, 1/58*
U.S. Cl. 96—49 **8 Claims**

A wet type developer for use in diazo-type copying consisting essentially of

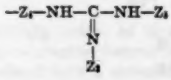
a. 0.2 to 5.0 percent by weight of an azo coupling component;
b. 0.5 to 10.0 percent by weight of an alkali agent;
c. 0 to 20.0 percent by weight of a reducing agent;
d. 0 to 0.5% by weight of surface active agent; and
e. the balance being water,

the azo coupling component being a compound of the formula

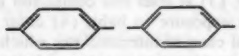


wherein Z_2 is

i. a hydroxy aryl group,
ii. a hydroxy aryl group substituted by a SO_3H, COOH, SO_3M, COOM, alkoxy, halogen, sulphonamide, or an alkoxycarbonyl group, wherein M is an alkali metal or ammonium, or
iii. a group represented by the formula



wherein Z_4 is (a) an arylene group, (b) an arylene group substituted by SO_3H, COOH, SO_3M, COOM, alkoxy, halogen or an alkyl group, or (c)



wherein Y is —O—, —SO_2—, or —NH—, and M is as defined above; each of Z_1 and Z_5 is

i' a hydroxy aryl group, or

ii'. a hydroxy aryl group substituted by SO_3H, COOH, SO_3M, COOM, alkoxy, halogen, sulphonamide, or an alkoxy-carbonyl group, wherein M is as defined above; and Z_3 is a hydroxy alkyl group, a hydroxy aryl group, or a hydroxy aryl group substituted by SO_3H, COOH, SO_3M, COOM, alkoxy, halogen, sulphonamide, or an alkoxycarbonyl group, wherein M is as defined above, with the proviso that when (i), (ii), (b), (i') or (ii') is a naphthalene group, all substituents are located on the ring of the naphthalene group not adjacent the guanyl residue.

3,769,014

BETA-DISULFONE SILVER HALIDE SOLUBILIZING AGENTS

Paul Harold Stewart, and Donald Warren Heseltine, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 42,606, June 1, 1970, abandoned. This application Apr. 19, 1971, Ser. No. 135,439

Int. Cl. G03c *5/38*

U.S. Cl. 96—61 **14 Claims**

β-disulfones are employed as silver halide solubilizing agents for use in fixing compositions, and as silver halide solvents in photographic chemical diffusion transfer processes, photosensitive elements, photographic film units and reception elements.

3,769,015

DEVELOPER MONOBATH FREE FROM FORMATION OF COLORED SLUDGE

Noboru Itoh; Senji Tosa; Hirokazu Tsukahara, and Norio Kobayshi, all of Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

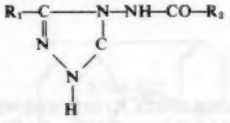
Filed Aug. 17, 1970, Ser. No. 64,609

Claims priority, application Japan, Aug. 18, 1969, 44/64748

Int. Cl. G03c *5/38*

U.S. Cl. 96—61 M **1 Claim**

Colored sludge due to silver colloids is prevented by adding at least one of 3-substituted derivatives of 4-acylamido-1,2,4-triazoline-5-thione represented by the general formula:



wherein R_1 and R_2 are selected from lower alkyl, aryl and aralkyl groups having seven or less carbon atoms, to a developer containing a silver complex-forming agent such as thiosulfates, thiocyanates and alkanolamines, and such a preventive state can be maintained for a prolonged period of time.

3,769,016

PHOTOGRAPHIC PAPER FOR RAPID STABILIZING PROCESS

Kinji Ohkubo; Masanao Hinata; Janpei Noguchi; Kunioki Ohmura; Akira Sato, and Akira Ogawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed June 7, 1971, Ser. No. 150,617

Claims priority, application Japan, June 5, 1970, 45/48547

Int. Cl. G03c *5/38, 1/18*

U.S. Cl. 96—61 **5 Claims**

A photographic paper for a rapid stabilizing process coated with a silver halide photographic emulsion containing a specific carboxyalkyl-containing sensitizing dye is disclosed. This specific dye is highly sensitive to green light in flash exposure, and does not remain unbleached after stabilization with a stabilizing solution containing a sulfurous acid radical-containing compound or sulfite adduct of formaldehyde. The photographic paper is especially useful for high speed transmission and recording of information.

3,769,017

PHOTOSENSITIVE SILVER HALIDE ELEMENT CONTAINING A THIOSUGAR ANTIFOGGANT

Kenro Sakamoto; Isamu Fushiki; Shinji Arai; Fumio Shimizu; Yoshimi Kuwabara; Tomio Nakajima, all of Tokyo; Sadao Sugita, Hanno; Hiroyuki Inokuma, Kanagawa, and Setsuzo Tejima, Nagoya, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1972, Ser. No. 239,343

Int. Cl. G03c *1/34, 1/76*

U.S. Cl. 96—76 R **9 Claims**

A photographic element comprising a support having thereon one or more layers at least one of which is a light-sensitive silver halide emulsion layer, said element contains at least one of certain thiosugars in an amount effective to inhibit fog.

3,769,018

DIAZOTYPE MATERIALS CONTAINING RESORCINOL MONO(ARYLOXY OR ARYLTHIO)ALKYL ETHERS

Adrianus Marie Petrus Hectors, Tegelen, Netherlands, assignor to Oce-Van der Grinten N.V., Venlo, Netherlands

Filed May 10, 1971, Ser. No. 142,059

Claims priority, application Netherlands, May 13, 1970, 7006932

Int. Cl. G03c *1/58, 1/54*

U.S. Cl. 96—91 R **8 Claims**

Resorcinol-mono(aryloxy or arylthio) alkyl ethers, e.g. m-(2-phenoxy-ethoxy)phenol, are. They are non-migrating in diazotype material; when coupled with light-sensitive diazo compounds therein after imagewise exposure of the material they form yellow to orange-yellow, light-stable images having high absorption for U.V. radiation. Compositions of the compounds with diazo compounds and blue-coupling azo couplers, particularly certain monoalkyl-amides of 2-hydroxy-3-naphthoic acid, provide sensitized diazotype film materials which are black-developing and excellently suited for making intermediate film copies to be used in further diazotype copying.

3,769,019

LIGHT AND HEAT SENSITIVE SHEET MATERIAL

Joseph A. Wiese Jr.; George Van Dyke Tiers, both of St. Paul, and George B. Rathmann, North Oaks, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 29, 1968, Ser. No. 732,863

Int. Cl. G03c *1/84, 5/00*

U.S. Cl. 96—84 R **11 Claims**

Photosensitive sheet material is described which produces sharply defined dense images on a transparent background simply by exposure to a light-image followed by heating.

3,769,020
PHOTOGRAPHIC MATERIAL WITH IMPROVED PROPERTIES

Werner Verburg, Carl-Rumpff, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 11, 1971, Ser. No. 114,666
Int. Cl. G03c *1/82*
U.S. Cl. 96—85 **7 Claims**

A photographic material is provided having a layer support backed on both sides with polyolefine and having at least one layer of a light sensitive silver halide gelatine emulsion layer thereon. The rear surface of the support having thereon a water impermeable layer containing a major proportion of a water insoluble binder and minor proportions of an antistatic agent and an inorganic or organic matting agent.

3,769,021
LIGHT-SENSITIVE DIAZOTYPE COPYING MATERIAL

Tadashi Saito, Kanagawa, and Kiyoshi Sakai, Tokyo, both of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Continuation-in-part of Ser. No. 659,609, Aug. 10, 1967, abandoned. This application Feb. 12, 1971, Ser. No. 115,057
Claims priority, application Japan, Aug. 26, 1966, 41/55819; Nov. 29, 1966, 41/77761; Nov. 29, 1966, 41/77762
Int. Cl. G03c *1/54*
U.S. Cl. 96—91 R **1 Claim**

A diazotype copying material having a light-sensitive coating containing a diazonium salt selected from the group consisting of 2,5-disubstituted derivatives of 4-dibenzylaminobenzene diazonium salt exhibits a very high sensitivity to light.

3,769,022
PHOTOSENSITIVE SILVER HALIDE EMULSIONS COMPRISING COATING AIDS

Frans Jan Ville, Edegem; Jozef Frans Willems, Wilrijk, and Paul Desire Van Pee, Edegem, all of Belgium, assignors to Gevaert-AGFA, N.V., Mortsel, Belgium

Filed Nov. 24, 1970, Ser. No. 92,495
Claims priority, application Great Britain, Dec. 31, 1969, 63,522/69
Int. Cl. G03c *1/38, 1/76, 1/78*
U.S. Cl. 96—114.5 **10 Claims**

Photographic element comprising a support and a light-sensitive silver halide emulsion layer is described. The element includes in a water-permeable layer, which may be the silver halide emulsion layer, a hydrophilic colloid binder and as a surface-active agent a monoether or monoester of a polyglycol having oxyethylene units and oxypropylene units in a ratio of at least 2 oxyethylene units to 1 oxypropylene units, the terminal hydroxyl group of said polyglycol monoether or monoester being carboxyalkylated and the carboxyl group being in acid or salt form. The photographic elements do not exhibit hydrophobic inclusions which lead to repellency spots or comets and, additionally, are resistant to yellowing upon development.

3,769,023
LIGHT SENSITIVE REPRODUCTION AND ELECTRON BEAM SENSITIVE MATERIAL

James Marvin Lewis, Aurora, and Eugene Wainer, Shaker Heights, both of Ohio, assignors to Horizons Incorporated, a Division of Horizons Research Incorporated, Cleveland, Ohio

Filed May 7, 1971, Ser. No. 141,393
Int. Cl. G03c *1/68*
U.S. Cl. 96—115 P **19 Claims**

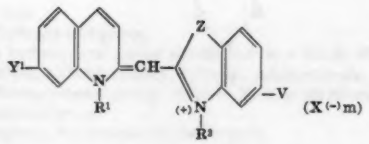
Light sensitive reproduction and electron beam sensitive material useful in preparing positive and/or negative copies, planographic and deep etched lithographic plates, deep etched printing plates, thin and thick film printed circuits, circuits for microelectronics, and chemical milling of metals, plastics and glass, is formed by coating a suitable support with a composition which includes (1) a hydroxy alkyl cellulose; (2) an ethenically unsaturated vinyl monomer including N-vinyl monomers; (3) at least one compound which produces free-radicals on exposure to light; (4) color formers taken from the general class of intermediates which produce color on exposure to condensation agents, oxidizing agents, and/or acids; (5) organic sulphur compounds for the promotion of adhesion; and (6) agents for improving the shelf stability of the product either in dissolved form or in the form of a solvent-free layer on a suitable surface taken from the class of cresols, phenols and triaryl compounds of the A sub group of metals taken from the 5th column of the Periodic Table. The composition may or may not contain other compounds which promote polymerization and/or crosslinking on exposure to light. The composition is dry working and is placed into solution for coating purposes only in organic solvents. After exposure and suitable development, the non-image areas may be removed by washing in water which has no effect on the areas which are exposed to light or electron beams. The exposed areas are colored and are hydrophobic in nature, readily accepting ink so as to make the end result suitable for lithographic and printing purposes. The composition has the further feature that while the non-image areas are soluble in cold water the image areas after exposure, development and washing in cold water may be removed readily for circuit purposes by washing in hot deionized water or in certain cases by a mixture of water and acetone. The composition is characterized by exceptionally high resolution, and though originally sensitive primarily to the ultraviolet and to electron beams can be sensitized to the visible through the panchromatic range by the addition of suitable color sensitizers. Certain aspects of the composition may be operated positively or negatively. The composition is further characterized that under suitable conditions it will print-out in any one of a variety of prechosen colors, if desired. The composition may be utilized for imaging and/or resist purposes as desired.

3,769,024
LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL WITH SENSITIZING DYE COMBINATION

Kaichiro Sakazume, Tokyo; Eiichi Sakamoto, Hanno, and Shizuo Saito, Tokyo, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

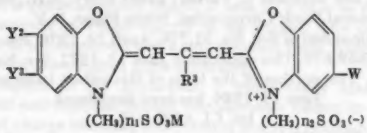
Filed July 15, 1971, Ser. No. 163,100
Claims priority, application Japan, July 16, 1970, 45/61738
Int. Cl. G03c *1/28*
U.S. Cl. 96—124 **10 Claims**

Photographic materials of improved green sensitivity are described containing a light-sensitive silver halide emulsion and including, in combination, at least one monomethincyanine dye of the general formula,



wherein Y^1 is a hydrogen atom, a lower alkyl group or a lower alkoxy group; Z is S or Se; V is a hydrogen atom or a lower alkyl group; R^1 is a lower alkyl group or a substituted alkyl

group; R^2 is a sulfoalkyl group or a carboxyalkyl group; X is an anion; and *m* is zero or 1, and at least one oxacarbocyanine dye of the general formula,



Wherein Y^1 is a hydrogen atom or a lower alkyl group; Y^2 is a hydrogen atom, a lower alkyl group, a lower alkoxyl group, a halogen atom or a phenyl group; W is a halogen atom or a phenyl group; R^3 is a lower alkyl group; M is a hydrogen atom, an alkali metal atom or H.Q (where Q is an organic base); and n_1 and n_2 are individually 2, 3 or 4. Lower fog levels are also noted. Emulsions are detailed as well as materials utilizing such emulsions.

3,769,025

SPECTRALLY SENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSION

Kinji Ohkubo; Keisuke Shiba; Junpei Noguchi; Kunioki Ohmura; Akira Sato, and Akira Ogawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan

Filed June 7, 1971, Ser. No. 150,606

Claims priority, application Japan, June 5, 1970, 45/48546

Int. Cl. G03c *1/14*

U.S. Cl. 96—124 **6 Claims**

A silver halide photographic emulsion containing two kinds of carboxyalkyl-bearing carbocyanine sensitizing dyes is disclosed. The emulsion is spectrally sensitized over a wide green light wavelength range of from 500 – 580 nm and has high sensitivity to green light in flash exposure. Photographic materials produced by using this emulsion are especially useful for information transmitting systems such as a press facsimile.

3,769,026

SPECTRALLY SENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSION

Keisuke Shiba; Haruo Takei, and Akira Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan

Filed Sept. 28, 1971, Ser. No. 184,604

Claims priority, application Japan, Sept. 28, 1970, 45/84532

Int. Cl. G03c *1/14*, *1/22*

U.S. Cl. 96—126 **17 Claims**

Silver halide emulsions containing a supersensitizing combination of at least one sensitizing carbocyanine dye and at least one merocyanine dye containing a tetrazole nucleus giving a high white light sensitivity or red sensitivity.

3,769,027

DRY POWDER FOR GLAZING FOODSTUFFS

Richard John Mangiere, 101 Busteed Dr., Midland Park, N.J.; Charles James Dwyer, 100 Hepburn Rd., Clifton, N.J., and Magdalena Adriana Bressler, 302 High St., Fairlawn, N.J.

Filed Mar. 11, 1971, Ser. No. 123,411

Int. Cl. A23b *1/10*

U.S. Cl. 99—1 **13 Claims**

An edible powder containing a water-soluble starch hydrolyzate having a D.E. within the range of 5 to 25, fat, algin, a food-grade phosphate, a food-grade source of calcium, and flavoring materials. The powder is coated onto uncooked foodstuffs such as meat. During cooking the powder forms a continuous film or coating having a glazed appearance around the foodstuff.

3,769,028

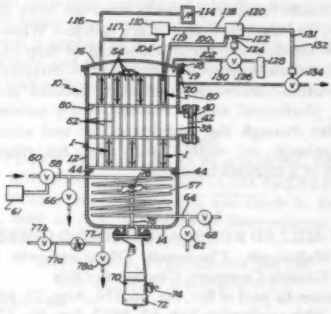
METHOD FOR HEAT PROCESSING FOOD PRODUCTS PACKAGED IN FLEXIBLE CONTAINERS

Morris H. Katz; Powell H. Sams, both of Minneapolis, and Duane M. Riley, Shakopee, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed July 15, 1971, Ser. No. 162,902

Int. Cl. A23l *3/12*

U.S. Cl. 426—345 **9 Claims**



A method for cooking food products packaged in flexible pouches placed between parallel restraining plates to restrict their thickness during heat processing is described. A quantity of food in fluid form and in some instances a predetermined amount of a gas-generating substance (leavening) is placed in each pouch to provide a flat baked or formed product of uniform thickness which substantially fills the package. The product develops a rigid or semi-rigid structure during exposure to heat or after cooling. If gas is generated within the pouch, the product becomes filled with gas cells. An overriding air pressure is controlled by sensing the pressure of a sample of the product placed within a rigid container at processing temperature.

3,769,029

METHOD OF MAKING A THERMOPLASTIC FOOD PRODUCT

Alexander J. Ganz, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed May 26, 1971, Ser. No. 147,193

Int. Cl. A23l *1/00*

U.S. Cl. 426—342 **9 Claims**

A process of making a thermoplastic shaped food product wherein an admixture of a thermoplastic hydroxypropyl cellulose polymer having an M. S. of at least 2 and an intrinsic viscosity of about 0.5 to 20 and a solid food product are thermoplastically shaped under temperature and pressure conditions sufficient to cause the admixture to soften and flow into the desired shape and, during said shaping, vaporizing any excess of initially present water from the admixture to provide a food product having a water content not exceeding 15 weight percent, cooling the shaped admixture and recovering the resulting shaped food product.

3,769,030

PROCESS FOR THE FABRICATION OF CHOCOLATE, ESPECIALLY MILK CHOCOLATE

Jurg Kleinert, Zurich, Switzerland, assignor to Chocoladefabriken Lindt & Sprungli Aktiengesellschaft, Kilchberg, Switzerland

Filed Dec. 22, 1970, Ser. No. 100,803

Claims priority, application Switzerland, Dec. 23, 1969, 19164/69

Int. Cl. A23g *1/00*

U.S. Cl. 426—45 9 Claims

A process for the fabrication of chocolate, especially milk chocolate is disclosed, wherein (a) cocoa is deodorized, (b) a carbohydrate-protein-additive mixture or carbohydrate-protein-additive-cocoa-mixture moistened with a carbohydrate solution is brought into reaction in at least one reactor at a temperature exceeding 50° C in order to form specific flavor and taste substances, the offensive smell and undesired volatile reaction products removed from the reaction mixture, and the reaction mixture is dried. While adding cocoa butter the cocoa treated according to step (a) is admixed with the carbohydrate-protein-additive-mixture or carbohydrate-protein-additive-cocoa-mixture treated according to step (b), plasticized and/or thinned, finely comminuted, and thereafter through the addition of fat and emulsifying agents is imbued or wetted with the fat phase and homogenized in a liquified condition.

3,769,031

LIGHT-MILLED ROAST AND GROUND COFFEE

Joseph R. McSwiggin, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 66,074, Aug. 21, 1970, abandoned. This application Feb. 17, 1972, Ser. No. 227,245

Int. Cl. A23f *1/04*

U.S. Cl. 426—148 10 Claims

Light-milled, cell-distorted roast and ground coffee wherein said light-milled coffee has a bulk density equal to that of conventional roast and ground coffee products. The product has some cell fracture and partial cell disruption and therefore has increased extractability. The light-milled, cell-distorted roast and ground coffee when viewed in bulk has the appearance of conventional roast and ground coffee but has from 10 to 30% increase in flavor strength. The method of producing this product comprises passing roast and ground coffee through a roll mill under controlled conditions of feed rate, pressure, and roll speed.

3,769,032

AROMA-ENRICHED COFFEE PRODUCTS AND PROCESS

Timothy A. Lubsen, Springfield Township; Rudolf G. Strobel, Colerain Township; Richard N. Reinhart, Springfield Township, and Jayantilal M. Patel, Reading, all of Ohio, assignors to The Procter & Gamble and Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 156,555, June 24, 1971, abandoned. This application Oct. 15, 1971, Ser. No. 189,746

Int. Cl. A23f *1/04*

U.S. Cl. 99—65 41 Claims

An aromatized instant coffee comprising the combination of aroma-enriched carrier and instant coffee. The product has an aroma intensity of at least 70,000 gas chromatograph counts, a pore factor of at least 0.9, and a retention factor of at least 0.80. Also part of the invention are preferred methods of applying aroma-enriched carrier to coffee products whose roast and ground coffee aroma is desired to be increased. An especially preferred method comprises adding aroma frost-enriched coffee oil in a dropwise addition manner to the coffee product. In a most preferred embodiment, dropwise addition is accomplished by injection, preferably by a syringe member, which is extended from the open end of a coffee container to near the bottom of the container and while the syringe is being pulled upward out of said container a predetermined amount of aroma-enriched coffee oil is injected into the product.

3,769,033

GREEN BEAN DECAFFINATION EMPLOYING FLUORINATED HYDROCARBONS

Hans P. Panzer, Stamford, Conn.; Robert S. Yare, New City, N.Y., and Malcolm R. Forber, Reeds Ferry, N.H., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 31,778, April 24, 1970, Pat. No. 3,669,679. This application June 13, 1972, Ser. No. 262,432. The portion of the term of this patent subsequent to June 13, 1989, has been disclaimed.

Int. Cl. A23f *1/10*

U.S. Cl. 426—428 5 Claims

Decaffeination of green coffee is achieved by extraction with fluorinated hydrocarbons.

3,769,034

SHELF STABLE, INTERMEDIATE MOISTURE, FLAKE TEXTURED DOUGHS AND METHOD FOR MAKING SAME

William M. Dreier, Jr., Minneapolis, and Donald C. Jacobson, St. Paul, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Jan. 19, 1971, Ser. No. 107,834

Int. Cl. A21d *15/00*

U.S. Cl. 426—151 8 Claims

A dough composition having a moisture level of about 18 to 26 percent by weight of the dough composition and which is shelf stable for prolonged periods of time. The dough composition contains an amylaceous component, a portion of which is gelatinized and a portion ungelatinized, shortening, a mold and yeast inhibitor and water.

3,769,035

PROCESS FOR SEALING TOASTER SANDWICH

Fredric Kleiner, New City, and Harvey Philip Fogel, Goshen, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed June 23, 1971, Ser. No. 155,964

Int. Cl. A21d *13/00*

U.S. Cl. 426—244 9 Claims

A process for sealing together two or more pieces of a foodstuff in which an edible carbohydrate material is spread on the areas to be sealed in the presence of moisture and the areas are then subjected to a high frequency alternating electric field for a time sufficient to heat and set the sealing material.

3,769,036

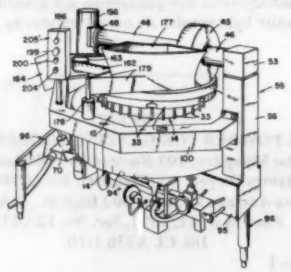
METHOD FOR BLENDING AND PORTIONING MEAT AND OTHER FOOD PRODUCTS

Donald W. Garnett, Grand Ledge, Mich., assignor to Mahogany Farms, Inc., Williamston, Mich.

Division of Ser. No. 847,297, Aug. 4, 1969, Pat. No. 3,683,793. This application Jan. 3, 1972, Ser. No. 215,225

Int. Cl. A22c *18/00*

U.S. Cl. 426—231 10 Claims



In respect to the method, slices of the product to be processed, illustratively but not limited to slices cut from a

pre-frozen block of random-distributed meat cuts, are gravitationally assembled in lamina-wise in a succession of rotatively traveling pockets, in which they are shaped and compressed as a stack. When a charge or portion represented by such a stack reaches a predetermined height it acts as a cam to trigger a pneumatically powered ejector in its pocket. The charge is ejected in a compacted and knife-trimmed form, having been volumetrically weighed quite accurately.

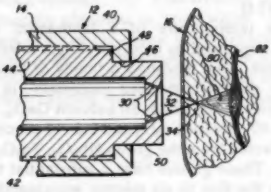
In respect to the apparatus, a horizontally rotated air manifold and multiple pocket sub-assembly passes its annular series of charge blending and forming pockets beneath a large, horizontally journalled compactor wheel. A manifold of the subassembly supplies pressure air for a number of spool-type pilot valve devices, one traveling with each pocket, which devices are individually triggered when the pocket charge thickens enough to raise the compactor wheel slightly. The effect of this is to open a master, full pocket detector valve, which pressurizes the pilot devices, and they in turn control the pressurization of ejector cylinders, one traveling with each pocket, to eject the completed product charge from its pocket, also to lower the ejector prior to another machine cycle.

3,769,037

METHOD OF FOAM INJECTING FLAVOR OR TEXTURE IMPROVING SUBSTANCES INTO MEAT

Jeffrey J. Sholl, Minneapolis, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Filed Aug. 18, 1971, Ser. No. 172,700
Int. Cl. A22c *18/00*
U.S. Cl. 426—281 **2 Claims**



An improved composition to be used in the injection of meat products. The composition donsists of a stabilized foam including moisture, a foam stabilizer and an active meat flavor or texture modifier.

3,769,038

FAT SPONGE

William A. Mitchell, Lincoln Park, N.J., and William C. Seidel, Monsey, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 612,094, Jan. 27, 1967, abandoned. This application Mar. 12, 1971, Ser. No. 123,826
Int. Cl. A23d *5/00*; A23l *1/22*
U.S. Cl. 426—363 **7 Claims**

A starch-fat sponge is prepared by intimately mixing fat, water, and pregelatinized starch, thereby forming an emulsion, and freeze-drying the emulsion. The so prepared starch-fat sponge can retain up to 92 percent fat, whether it is a liquid or a solid fat. This dry fat-containing starch sponge product, after being dried, can be comminuted and mixed with various powdered condiments, such as garlic, onions, and acetic acid to form a powdered seasoning that can be sprinkled by means of a shaker onto steaks or vegetable salads.

3,769,039

PROCESS FOR FABRICATING LIQUID-FILLED CHOCOLATE PRODUCTS WITH AN INNER CRUST

Jurg Kleinert, Kilchberg, Switzerland, assignor to Chocoladefabriken Lindt & Sprungli Aktiengesellschaft, Kilchberg, Switzerland

Filed Sept. 15, 1971, Ser. No. 180,664
Claims priority, application Switzerland, Sept. 22, 1970, 14024/70
Int. Cl. A23l *1/26, 1/20*
U.S. Cl. 426—282 **16 Claims**

A method of fabricating chocolate products filled with a sugar-containing, especially also alcohol-containing liquid fill, a sugar crust layer being present between the outside chocolate casing and the liquid core, and wherein the inner wall of a hollow mold formed of chocolate is provided with sugar inoculation crystals separated from one another by fat particles. The liquid fill is then introduced into the chocolate mold, this liquid fill being over-saturated with sugar at room temperature. There is applied to the surface of the liquid fill an inoculation crystal and fat containing mass, and then this mass is covered with a chocolate base layer.

3,769,040

SUBSTITUTED THIAZOLES IN FLAVORING PROCESSES AND PRODUCTS PRODUCED THEREBY

Alan O. Pittet, Atlantic Highlands, and Denis E. Hruza, Brick Town, both of N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

Filed Nov. 9, 1970, Ser. No. 88,186
Int. Cl. A23l *1/26*; C07d *91/30*
U.S. Cl. 426—65 **9 Claims**

Process for altering the flavors and/or fragrances of materials which comprise adding thereto effective amounts of at least one thiazole having the formula

wherein R is hydrogen, alkyl, or acyl; X is alkoxy, hydrogen, or, when R and Y are alkyl, alkyl; and Y is alkyl, acyl, alkoxy or hydrogen, no more than two of R, X, and Y being hydrogen; compositions containing such thiazoles and compositions; perfumed materials containing such thiazoles and compositions; and novel thiazoles and processes for producing same.

3,769,041

METHOD OF DYEING PROTEIN SEED PARTICLES

Arthur A. Levinson, Chicago, and Kenneth B. Basa, Evanston, both of Ill., assignors to National Can Corporation, Chicago, Ill.

Filed Oct. 2, 1970, Ser. No. 77,698
Int. Cl. A23l *1/26, 1/20*
U.S. Cl. 426—250 **9 Claims**

A process for evenly distributing food dye or similar coloring matter on the surface of vegetable protein seed meal material in particulate flake or grit form is provided which comprises incorporating the coloring material in a polyhydroxy alcohol carrier and applying the resulting carrier admixture to the particulate protein seed meal material with agitation until the distribution on the surface of the particulate is essentially complete. The coloring matter is fixed in the product by compaction of the resulting colored particulate under heat and pressure to produce a uniformly colored vegetable protein seed meal based product which is resistant to color extraction by water under typical aqueous food processing condition customarily.

3,769,042

MICROBIAL STABILIZATION OF A COMBINED MEAT, VEGETABLE AND GRAVY FOOD PRODUCT

Milton Kaplow, White Plains, and Joseph J. Halik, Ossining, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 758,679, Sept. 10, 1968, Pat. No. 3,634,104. This application May 5, 1971, Ser. No. 140,617. The portion of the term of this patent subsequent to Jan. 11, 1989, has been disclaimed.

Int. Cl. A23b *1/01, 1/04, 7/02*

U.S. Cl. 426—326 6 Claims

A food product comprised of solid pieces of meat and/or vegetables intimately mixed within a liquid phase gravy or sauce is made microbiologically stable at non-refrigerated storage conditions by immersing the solids phase in an excess of said liquid phase comprising an aqueous solution of stabilizing solutes to infuse a portion of the solutes into the solids phase to the extent of reducing the water activity of the solids phase to a level ranging from about 0.6 to about 0.9 and concurrently forming said surrounding liquid phase gravy to have residual stabilizing solutes such that the water activity of the liquid phase differs from the water activity of the solids phase by less than 0.1.

3,769,043

TREATING SOLUTION FOR PLANOGRAPHIC PRINTING PLATES

Tsuyoshi Morishima, and Rentaro Shimizu, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Continuation-in-part of Ser. No. 814,792, April 9, 1969, abandoned. This application May 20, 1971, Ser. No. 145,550

Int. Cl. C09d *5/20;* C09k *3/00, 3/18*

U.S. Cl. 106—2 4 Claims

A treating solution for planographic printing plates, which consists essentially of an aqueous solution containing dissolved therein at least one iron-cyano-complex such as ammonium ferrocyanide, sodium ferrocyanide, sodium ferricyanide, potassium ferrocyanide and potassium ferricyanide, at least one heteropoly-acid such as phosphorus vanadate and ammonium or alkali metal salts of said acids and at least one phosphate such as diammonium hydrogen phosphate, sodium dihydrogen phosphate and dipotassium hydrogen phosphate, the balance, apart from impurities, being water.

3,769,044

COMPOSITIONS AND METHODS FOR MAKING MOLDED REFRACTORY ARTICLES

Robert A. Horton, Chesterland, Ohio, assignor to Precision Metalsmiths, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 94,580, Dec. 2, 1970, Pat. No. 3,686,006. This application Feb. 22, 1971, Ser. No. 117,775The portion of the term of this patent subsequent to Aug. 22, 1989, has been disclaimed.

Int. Cl. B28b *7/28;* C04b *35/64*

U.S. Cl. 106—38.3 2 Claims

An injection moldable refractory mixture containing comminuted refractory material as the major component, a sublimable binder, and a non-sublimable binder which is at least in part ethyl cellulose.

3,769,045

PROCESS FOR PRODUCING LIQUID WRITE CRAYON

Theodore Maierson; Edward M. Powers, and Thomas J. Bowles, all of Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed June 22, 1971, Ser. No. 155,658

Int. Cl. C09d *13/00, 11/00*

U.S. Cl. 106—19 1 Claim

A liquid write crayon is disclosed. The crayon comprises a mixture of at least one wax and encapsulated marking liquid. This crayon contains a large amount of the encapsulated marking liquid and yet maintains a proper balance of fluidity, lubricity and strength. The crayon is produced by a combination of steps which include dry blending, light pressure and mild heating.

3,769,046

HOT TOPPING

James K. Sprinkle, 2085 Grand Blvd., Schenectady, N.Y., and Santi F. Misitano, 614 Sanders Ave., Scotia, N.Y.

Continuation-in-part of Ser. No. 40,395, May 25, 1970, abandoned. This application Apr. 5, 1972, Ser. No. 241,403

Int. Cl. B28b *7/36*

U.S. Cl. 106—38.22 2 Claims

In the casting of metals, the use of compatible exothermic hot topping material in compressed agglomerated form, having an ignition time greater than five minutes, reduces air pollution and safety hazards and permits reuse of the riser material.

3,769,047

METHOD OF DEPRESSING THE LIQUIDUS TEMPERATURE OF LANTHANUM ALUMINOGERMANATE GLASSES, AND THE GLASSES PRODUCED

William H. Dumbaugh, Jr., Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Apr. 27, 1971, Ser. No. 137,856

Int. Cl. C03c *3/12, 3/24*

U.S. Cl. 106—47 Q 3 Claims

The liquidus temperature of a lanthanum aluminogermanate glass is depressed by incorporating a selected additive in the glass batch. This produces a family of lanthanum aluminogermanate glasses composed essentially, in percent by weight on an oxide basis, of 25–50 percent GeO_2, 1.5–25 percent Al_2O_3, 15–40 percent La_2O_3 and 2.5–45 percent of one or more oxides selected from the group Nb_2O_5, Ta_2O_5, SrO, BaO, PbO, and ZnO. These glasses have a substantial transmission for radiation in the five to six micron wavelength range, are hard and abrasion resistant, and have moderate coefficients of thermal expansion and good glassworking properties. They are particularly adapted to use as windows in infrared detection systems.

3,769,048

FRIT COMPOSITION FOR PRODUCING ACID-RESISTANT VITREOUS ENAMELS ON CAST IRON

Frank J. Borri, Fords, and John T. Lindson, South Amboy, both of N.J., assignors to N L Industries, Inc., New York, N.Y.

Filed Oct. 14, 1970, Ser. No. 80,751

Int. Cl. C03c *5/02;* B32b *15/24;* C03c *3/10*

U.S. Cl. 106—49 5 Claims

Self-opacifying frit compositions for producing vitreous enamels on cast iron are prepared by melting a mixture of various source materials such as the carbonates, nitrates, oxides, fluorides, etc., of the base oxides of groups R_2O and RO, a neutral oxide of group R_2O_3, the acid oxides of group RO_2, lead oxide and fluorine in specific proportions such that when the molten mixture is quenched a frit composition is produced capable of forming a vitreous enamel coating on cast iron characterized by excellent adherence, white color, high hiding power, uniform gloss and high acid resistance.

3,769,049

TRANSPARENT SINTERED ALUMINA AND PROCESS FOR PREPARING THE SAME

Akinori Muta, Tokyo; Takanobu Noro, Yokohama; Gyozo Toda, Hino, and Chieko Yamazaki, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 799,132, Dec. 23, 1968, abandoned. This application May 28, 1971, Ser. No. 148,160

Claims priority, application Japan, Dec. 27, 1967, 42/83223; Mar. 1, 1968, 43/12913

Int. Cl. C04b *35/10*

U.S. Cl. 106—73.4 4 Claims

Sintered alumina prepared by adding to a high purity alumina powder suitable amounts of magnesium oxide and at least one of cadmium and zinc oxides, and subjecting the mixture to compression-molding and then to sintering at an elevated temperature. The sintered alumina is higher in in-line transmission than sintered alumina prepared without the addition of cadmium or zinc oxide.

3,769,050

SILICATE PAINTS

Colin Alfred Terry, Baughurst, and Peter Walker, Burghfield Common, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Feb. 12, 1971, Ser. No. 115,055

Claims priority, application Great Britain, Feb. 12, 1970, 6,826/70

Int. Cl. C09d *1/02*

U.S. Cl. 106—84 7 Claims

A thermal shock-resistant zinc oxide-pigmented silicate paint comprising zinc oxide pigment admixed with a silicate solution, preferably an aqueous alkali silicate solution, is rendered shock-resistant by heat-treating the zinc oxide powder - generally obtained as "zinc white" when Zn fumes are condensed in air or O_2 - prior to admixture of the powder with the silicate solution. The preferred heat treatment, in the range 600–900°C, produces pigment powder having a particle size distribution ranging from 0.1–1.0 microns up to 0.5–3.0 microns.

3,769,051

SET RETARDER AND AIR-ENTRAINER COMPOSITION FOR MORTAR

George E. Hardin, Bloomington, Ind.

Continuation-in-part of Ser. No. 817,183, April 17, 1969, abandoned. This application June 15, 1972, Ser. No. 263,293

Int. Cl. C04b *7/02*

U.S. Cl. 106—90 5 Claims

A mortar set retarder and air-entrainer composition comprising an aqueous solution of sodium tripolyphosphate, a water-soluble ethylene oxide condensation product and a wetting agent. The retarder may optionally include a polyamino polycarboxylic acid.

3,769,052

PLASTER COMPOSITION

Leonard D. Kurtz, Woodmere, N.Y., assignor to Sutures, Inc., Coventry, Conn.

Filed May 17, 1971, Ser. No. 144,303

Int. Cl. C04b *11/00*

U.S. Cl. 106—111 7 Claims

Plaster of paris of high strength is obtained from a composition comprising plaster and synthetic resin fiber flock. Particularly strong products are obtained with flock of polyester fiber, for example polyethylene terephthalate fiber.

3,769,053

PROCESS FOR THE TREATMENT OF FLY ASH

John T. Pennachetti, St. Catharines, Ontario, and Joseph F. Boux, Burlington, Ontario, both of Canada, assignors to Enercon International Limited, Hamilton, Ontario, Canada

Division of Ser. No. 34,874, May 5, 1970, Pat. No. 3,669,703, which is a division of Ser. No. 687,465, Dec. 4, 1967, Pat. No. 3,533,819. This application Apr. 26, 1972, Ser. No. 247,515

Int. Cl. C08h *17/04*

U.S. Cl. 106—288 B 2 Claims

Fly ash is subjected to a plurality of operations to recover therefrom a multiplicity of valuable products, including an iron concentrate, an improved pozzolanic material, a high carbon content product and an agglomerable material, suitable for formation into a controlled sintered aggregate product.

3,769,054

PROCESS FOR THE TREATMENT OF FLY ASH

John T. Pennachetti, St. Catharines, and Joseph F. Boux, Burlington, Ontario, both of Canada, assignors to Enercon International Limited, Hamilton, Ontario, Canada

Division of Ser. No. 34,874, May 5, 1970, Pat. No. 3,669,703, which is a division of Ser. No. 687,465, Dec. 4, 1967, Pat. No. 3,533,819. This application Apr. 26, 1972, Ser. No. 247,516

Int. Cl. C08h *17/04*

U.S. Cl. 106—288 B 3 Claims

Fly ash is subjected to a plurality of operations to recover therefrom a multiplicity of valuable products, including an iron concentrate, an improved pozzolanic material, a high carbon content product and an agglomerable material, suitable for formation into a controlled sintered aggregate product.

3,769,055

METHOD FOR THE PREPARATION OF AN OVERGLAZE CERAMIC DECALCOMANIA

Louis A. Bianco, Tuckahoe, N.Y., assignor to Commercial Decal, Inc., Mt. Vernon, N.Y.

Filed Oct. 27, 1971, Ser. No. 193,153

Int. Cl. B41m *3/12*, *7/02*

U.S. Cl. 117—3.1 6 Claims

A method for the preparation of an overglaze ceramic decalcomania is provided wherein a wet ink formulation containing a liquid printing vehicle or medium and an oxide coloring agent, free of glass, is wet printed on a decalcomania backing sheet to form a wet design layer thereon free of glass, and a protective coating of prefused glass flux is separately deposited on the wet design layer, so that when the design layer and protective coating deposited thereon is positioned on a glazed piece of ware and fired, the protective coating of prefused glass flux fuses and tightly binds the design layer to the ware.

3,769,056

CONTAINER SURFACE AND METHOD OF OBTAINING SAME

Thomas F. Sincock, Simsburg, Conn., assignor to Ilikon Corporation, Natick, Mass.

Division of Ser. No. 760,911, Sept. 19, 1968, abandoned. This application Oct. 30, 1970, Ser. No. 85,358

Int. Cl. B44d *1/52*

U.S. Cl. 117—5.5 4 Claims

Vendability of nestable, resilient, plastic containers is improved by coating outside surface portions with a lubricant.

These portions preferably are the nesting means and/or the lower sidewall area of the container. A process is provided for

depositing the lubricant on the container which, in the case of a partially foamed container, may occur simultaneously with its exposure to a foaming agent.

3,769,057

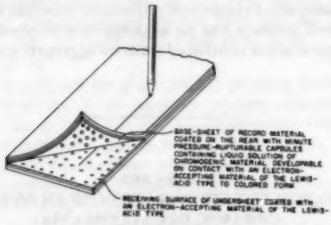
PRESSURE-SENSITIVE RECORD SHEETS EMPLOYING AMIDO- AND SULFONAMIDO-SUBSTITUTED FLUORANS

Chao-Han Lin, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

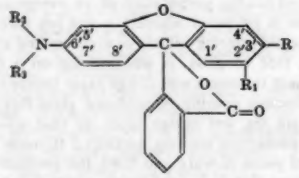
Division of Ser. No. 792,435, Jan. 21, 1969, Pat. No. 3,627,787. This application Mar. 2, 1971, Ser. No. 120,359

Int. Cl. B41m 5/22

U.S. Cl. 117—36.2 **5 Claims**


BASE-SHEET OF RECORD MATERIAL COATED ON THE REAR WITH MINUTE PRESSURE-RUPTURABLE CAPSULES CONTAINING LIQUID SOLUTION OF CHROMOGENIC MATERIAL DEVELOPABLE ON CONTACT WITH AN ELECTRON-ACCEPTING MATERIAL OF THE LEWIS-ACID TYPE TO COLORED FORM
RECEIVING SURFACE OF UNDERSHEET COATED WITH AN ELECTRON-ACCEPTING MATERIAL OF THE LEWIS-ACID TYPE

A chromogenic material of normally colorless form is disclosed, having a structural formula:



wherein R_1 represents a radical having the structural formula $-NH-CO-CYY$ or a radical having the structural formula $-NH-SO_{60}-Y$ wherein Y comprises phenyl, methoxyphenyl, naphthyl, quinolyl, benzyl, alkyl radicals having less than five carbon atoms, and amino-, nitro-, and alkyl-substituted phenyl radicals wherein the alkyl groups have less than five carbon atoms; R comprises hydrogen and alkyl radicals having less than five carbon atoms; and R_2 comprises alkyl radicals having less than five carbon atoms. Example include 2′-acetamido-6′-diethylaminofluoran; 6′-diethylamino-2′-(phenylacetamido)-fluoran; 6′-diethylamino-2′-(p-toluenesulfonamido)fluoran; 2′-acetamido-6′-diethylamino-3′-methylfluoran; 6′-diethylamino-3′-methyl-2′-(p-toluenesulfonamido)fluoran; 6′-diethylamino-2′-(p-nitrobenzenesulfonamido)fluoran; 6′-diethylamino-3′-methyl-2′-(p-nitrobenzenesulfonamido)fluoran; 6′-diethylamino-2′-(2-naphthalenesulfonamido)fluoran; 6′-diethylamino-2′-(8-quinolinesulfonamido)fluoran; and 6′-diethylamino-2′-(4-methoxybenzenesulfonamido)-fluoran.

3,769,058

APPARATUS AND METHOD OF PATTERNING SHEET MATERIAL

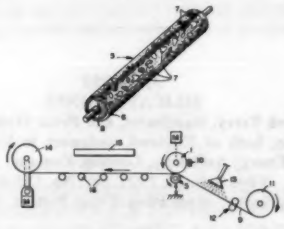
Bernd Bayer, Elsenfeld; Alexander Hubert, Owrth am Main; Werner Riess, Erlenbach; Helmut Schaefer, and Hans Wetteroth, both of Elsenfeld, all of Germany, assignors to Glanzstoff AG, Wuppertal, Germany

Filed Apr. 5, 1971, Ser. No. 131,039

Claims priority, application Germany, Apr. 3, 1970, G 70 12 216.6

Int. Cl. B44d 1/14

U.S. Cl. 117—10 **7 Claims**



Apparatus for brush patterning a synthetic sheet material including a pair of parallel rollers, one of which is a buffing wheel rotated independently of means for transporting the sheet material and the other of which is a pressure roller with an outer elastomeric surface layer containing irregularly shaped indentations around its circumference and positioned at an interval from the buffing wheel roller sufficient to exert a corresponding irregular pressure on the surface being brushed. The apparatus and method further include means for applying a finish coating liquid while transporting the sheet material between the two rollers.

3,769,059

X-RAY AND GAMMA-RAY SCINTILLATORS AND DETECTOR SCREENS INCORPORATING SAME

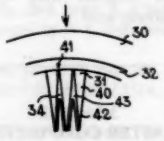
Bertrand M. Driard; Lucien F. Guyot, and Guy Roziere, all of Paris, France, assignors to Thomas-CSF, Paris, France

Filed Dec. 22, 1970, Ser. No. 100,564

Claims priority, application France, Dec. 30, 1969, 6945437

Int. Cl. C09k 1/06

U.S. Cl. 117—33.5 R **8 Claims**



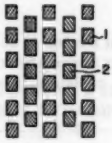
An X-ray or gamma-ray scintillator comprising, on a substrate, an alkaline halide layer of fibrous structure having the needle form, with the needles perpendicular to the surface of the substrate, the scintillator being associated, in detector screens of image-intensifier tubes for X-ray or gamma-ray, with a photo-sensitive layer enshrouding said needles.

3,769,060

SPECIFIC PROCESSED CLOTHS AND A METHOD OF PRODUCING THE SAME

Shunya Ida, Nara City; Kenjiro Hosokawa, Osaka; Hiroyoshi Hasegawa, Osaka; Seinosuke Nakanishi, Osaka; Katsura Kajino, Osaka, and Keizo Ueda, Ashiya City, all of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1971, Ser. No. 111,252
Claims priority, application Japan, Feb. 3, 1970, 45/10179; Sept. 29, 1970, 45/85682
Int. Cl. B44d *1/16*
U.S. Cl. 117—37 R 45 Claims



Specific processed fabric or sheet material which has been finished with a plurality of finishing agents differing in their chemical and/or physical function. The fabric or sheet material has a finishing agent fixed uniformly on its one part and another finishing agent on its different part. Those parts which respectively provide the fabric or sheet material with different chemical or physical properties may consist of a large number of small zones substantially uniformly distributed on the surface of the fabric or sheet material, or may be two surfaces, i.e., one surface and the reverse surface. The proposed processes enable a fabric or sheet material to be finished with a plurality of finishing agents which are incompatible with one another.

3,769,061

PRE-ETCH TREATMENT OF ACRYLONITRILE-BUTADIENE-STYRENE RESINS FOR ELECTROLESS PLATING

Oleh Borys Dutkewych, Medfield, and William A. Conlan, Jr., Attelboro, both of Mass., assignors to Shipley Company, Inc., Newton, Mass.

Filed June 14, 1971, Ser. No. 152,995
Int. Cl. B44d *1/092*; C23b *5/60*
U.S. Cl. 117—47 A 20 Claims

Aqueous solution are provided containing at least one five membered heterocyclic compound having a nuclear carbonyl group and at least one heterocyclic oxygen atom. The solutions are used primarily as a pre-treatment prior to etching for the electroless metal plating of acrylonitrile-butadiene-styrene resins (ABS resins) to improve adhesion between an ABS resin substrate and a deposited electroless metal. An overall process for metal plating on ABS substrate would include the steps of pre-etching with the solution of this invention, oxidizing with a strong oxidizing agent, preferably, a chromic acid conditioning solution having a high hexavalent chromium content, catalyzing the so treated substrate to make the same catalytic to deposition from an electroless plating solution and depositing electroless metal over the substrate.

3,769,062

PRESSURE-SENSITIVE RECORDING PAPER

Sadao Ishige; Takao Hayashi, and Hiroharu Matsukawa, all of Ashigara-Kamigun, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 8, 1971, Ser. No. 160,775
Claims priority, application Japan, July 8, 1970, 45/59698
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 6 Claims

A pressure-sensitive recording paper comprising a layer of microcapsules containing a color former and a layer of a color developer, said layers coated on the same support or different supports, and at least one of said layers containing an ether derivative of an aromatic hydroxyl compound.

3,769,063

PROCESS FOR APPLYING EMULSION COATING MATERIAL TO PRODUCE CRAKLE PATTERNS

Kango Kizawa, Amagasaki, Japan, assignor to Meiken Kagakukogyo Kabushiki Kaisha, Akashi-shi, Hyogo-ken, Japan

Filed May 12, 1971, Ser. No. 142,764
Claims priority, application Japan, Feb. 10, 1971, 46/5733
Int. Cl. B44d *1/44*
U.S. Cl. 117—41 2 Claims

A process for applying emulsion coating material to produce crackle patterns which comprises applying an aqueous emulsion undercoating material having as base material a synthetic resin emulsion containing at least one selected from the group consisting of a water-soluble high molecular weight organic substance and an inorganic substance having high swelling property in excess of the quantity required as emulsion stabilizing agent or dispersant, drying the thus applied emulsion undercoating material, and applying an aqueous emulsion set coating material containing as base material at least one selected from the group consisting of homo- and co-polymer emulsions of acrylic ester, homo- and co-polymer emulsions of methacrylic ester, said emulsion containing silicon dioxide sol.

3,769,064

METHOD OF ADHERING SILICONE RUBBER TO METAL SURFACES USING GLYCINE OR DIMETHYLFORMAMIDE

Thomas W. Greenlee, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed June 18, 1971, Ser. No. 154,646
Int. Cl. B44d *1/40*, *1/36*
U.S. Cl. 117—49 4 Claims

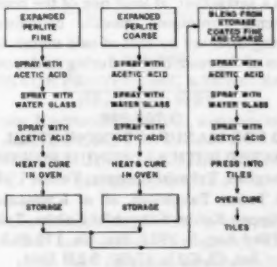
The adhesion to metal surfaces of room temperature vulcanizable silicone rubber curable through condensation of silicon-bonded hydroxyls with silicon-bonded alkoxy radicals is improved by contacting the metal surface with dimethyl-formamide or an aqueous solution of glycine, removing the glycine or dimethylformamide, drying, thereafter applying the room temperature vulcanizable silicone rubber to the treated surface and allowing it to cure.

3,769,065

MFTHOD OF COATING PERLITE AND PRODUCING MATERIALS OF CONSTRUCTION

Daniel K. Dunn, R.R. No. 1, P.O. Box 325, Kankakee, Ill.

Filed Dec. 6, 1971, Ser. No. 205,201
Int. Cl. B44d *1/08*
U.S. Cl. 117—54 13 Claims



A method of coating expanded perlite wherein the material is first sprayed with an acid solution, next sprayed with a

waterglass solution, and then sprayed with an acid solution. Also disclosed are an apparatus for practicing the method and products made with the coated expanded perlite.

3,769,066

REPLACEMENT OF CAPSULE CONTENTS

Theodore Maierson, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed June 22, 1971, Ser. No. 155,657
Int. Cl. B44d *1/44*
U.S. Cl. 117—63 **2 Claims**

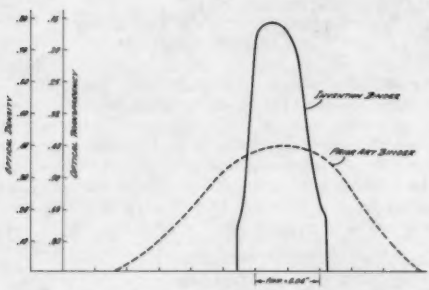
A process for replacing the contents of capsules without rupturing the capsule walls is disclosed. The capsules are subjected to water-miscible solvents and the capsule contents are replaced by diffusion. In the event color producing reactants are present, a color reaction is produced without rupturing the capsule walls. A preferred method of applying the water-miscible solvent is by employing a felt-tip marker.

3,769,067

METHODS OF CONTROLLING THE MIGRATION OF RESIN DISPERSIONS AND RESIN BINDERS IN THE MANUFACTURE OF POROUS MATERIALS SUCH AS BONDED NONWOVEN FABRICS

Arthur H. Drelich, Plainfield, and Bobby R. Bowman, East Brunswick, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. Nos. 66,003, Aug. 21, 1970, abandoned, and Ser. No. 194,908, Nov. 2, 1971. This application Apr. 5, 1972, Ser. No. 241,110
Int. Cl. B44d *1/44*
U.S. Cl. 117—63 **10 Claims**



Methods of controlling the migration of resin dispersions such as resin binders in the manufacture of porous materials such as bonded nonwoven fabrics comprising the use of a resin dispersion or resin binder composition comprising: (1) a metal ammine complex coordination compound; (2) a synthetic resin; and (3) a surfactant, at least one of the resin and surfactant components containing specific coordinating ligands capable of being affected by ions of said metals to control the total migration of the resin binder during its deposition.

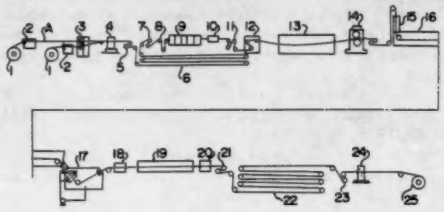
3,769,068

METHOD FOR MANUFACTURING STEEL PLATES COATED WITH ALUMINUM POWDER

Hidehisa Yamagishi; Takashi Kamata; Yoshio Ujiki; Fumitoshi Yokoi, and Tadao Takahashi, all of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 9, 1971, Ser. No. 170,063
Int. Cl. C23c *17/00*; **B22f** *7/04*
U.S. Cl. 117—65.2 **4 Claims**

A method for rapidly and continuously manufacturing steel plates coated with aluminum powder wherein the plates are cleaned and coated with a slurry of aluminum powder in water, dried, rolled between special internally water-cooled rolls to achieve substantially theoretical density of the coated



aluminum and then heat treated at between 450°C and 700°C for 1–5 seconds in either a specially controlled high frequency induction furnace or a radiation tube type furnace or combination of both.

3,769,069

POLYESTERURETHANE COATED METAL

John M. Sawyer, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 16, 1971, Ser. No. 124,923
Int. Cl. B32b *15/08*
U.S. Cl. 117—75 **3 Claims**

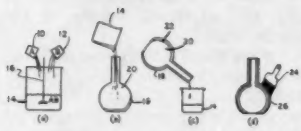
A metal laminate comprising a metal having a primer coat of zinc chromate, epoxy resin and a curative covered with a polyesterurethane elastomer.

3,769,070

A METHOD OF GLAZING GREENWARE WITH AN AMBIENT EPOXY RESIN CURING COMPOSITION

Stephen J. Schilt, 104 Via Palermo, Newport Beach, Calif.

Filed Feb. 18, 1971, Ser. No. 116,574
Int. Cl. B44d *1/02*
U.S. Cl. 117—94 **7 Claims**



An ambient cure glaze composition particularly adapted for decorating and strengthening greenware comprising a flowable composition containing a reactive epoxy liquid polymer, non-volatile diluents, coloring agents and viscosity controlling agents. The flowable composition is cured and hardened by combination with a curing agent which is absent free amine groups. The composition is non-toxic and has low dermal sensitivity.

3,769,071

PRESSURE SENSITIVE ADHESIVE TAPE COMPRISING 5-FLUOROURACIL

Ronald J. Trancik, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 4, 1971, Ser. No. 150,183
Int. Cl. C09j *7/02*
U.S. Cl. 117—122 P **1 Claim**

A pressure-sensitive adhesive tape is provided wherein 5-fluorouracil is incorporated in a compatible, preferably self-tackified polyurethane pressure-sensitive adhesive. The tape is useful for topical treatment of abnormal skin growths. The adhesive serves as a biologically and chemically inert carrier for the 5-fluorouracil.

3,769,072
PIPE LAGGING MATERIAL AND PROCESS FOR MAKING SAME
James W. Echerd, Charlotte, N.C., and Warren K. Watters, New Orleans, La., assignors to H. K. Porter Company, Inc., Trenton, N.J.
Filed Mar. 24, 1967, Ser. No. 625,604
Int. Cl. C03c *25/00*
U.S. Cl. 117—126 AF 9 Claims

A pipe lagging material composed of a base having impregnated therein a composition consisting essentially of inorganic hydrophilic siliceous material, which can be wet with water and wrapped about a pipe conduit to form, upon subsequent drying, a rigid, non-friable, flame-resistant covering thereon.

3,769,073
PROCESS FOR PROTECTING A SUBSTRATE WITH AN ARYLSULFONAMIDOPYRAZINE INTUMESCENT AGENT
Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.
Filed Feb. 11, 1972, Ser. No. 225,661
Int. Cl. C09d *5/18*; C09k *3/28*
U.S. Cl. 117—136 5 Claims

Intumescent compositions of the invention comprise certain arylsulfonamidopyrazines, such as 2-sulfanilamidopyrazine, 2-sulfanilamidobenzopyrazine, and derivatives thereof. The intumescent agents may be employed in conjuction with additives conventionally used in intumescent compositions. For use in protecting substrates from heat and fire, the intumescent compositions may be applied to the substrates in any suitable manner, such as by electrodeposition, spraying onto an adhesive substrate, or application of a coating composition comprising the intumescent agent.

3,769,074
INTUMESCENT COMPOSITION COATED ARTICLE
Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.
Filed Dec. 23, 1971, Ser. No. 211,635
Int. Cl. C09k *3/28*
U.S. Cl. 117—136 9 Claims

Coated articles of the invention are substrates coated with intumescent compositions which comprise certain nitrogen-containing aromatic sulfones, thiosulfonates, and sulfonates. Exemplary of the intumescent agents are bis(p-aminophenyl) sulfone, 1,2-bis (4-acetamidophenylsulfonyl)ethane, p,p'-diacetamidophenylthiosulfonate, and p,p'-diaminophenylsulfonate.

3,769,075
PROCESS FOR PROTECTING A SUBSTRATE WITH AN N ARYL SUBSTITUTED ARYLSULFONAMIDE INTUMESCENT AGENT
Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.
Filed Feb. 11, 1972, Ser. No. 225,650
Int. Cl. C09d *5/18*; C09k *3/28*
U.S. Cl. 117—136 4 Claims

Intumescent compositions of the invention comprise certain N^1-aryl substituted arylsulfonamides, such as sulfanilamidobenzene, sulfanilamidonaphthalene, and derivatives thereof. The intumescent agents may be employed in conjunction with additives conventionally used in intumescent compositions. For use in protecting substrates from heat and fire, the intumescent compositions may be applied to the substrate in any suitable manner, such as by electro-deposition, spraying onto an adhesive substrate, or application of a coating composition comprising the intumescent agent.

3,769,076
ARYLSULONAMIDOPYRAZOLE AND IMIDAZOLE INTUMESCENT COATED ARTICLES
Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.
Filed Feb. 22, 1972, Ser. No. 228,384
Int. Cl. C09d *5/18*; C09k *3/28*
U.S. Cl. 117—136 7 Claims

Intumescent compositions of the invention comprise certain arylsulfonamidopyrazoles and imidazoles, such as 3-sulfanilamidopyrazole, 2-sulfanilamidoimidazole, and derivatives thereof. The intumescent agents may be employed in conjunction with additives conventionally used in intumescent compositions. Articles coated with these intumescent compositions are also described.

3,769,077
PROCESS FOR PROTECTING A SUBSTRATE WITH AN ARYLSULFONEMIDOPYRIMIDINE INTUMESCENT AGENT
Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.
Filed Feb. 11, 1972, Ser. No. 225,638
Int. Cl. C09d *5/18*; C09k *3/28*
U.S. Cl. 117—136 6 Claims

Intumescent compositions of the invention comprise certain arylsulfonamidopyrimidines, such as the 2-, 4-, and 5-sulfanilamidopyrimidines. The intumescent agents may be employed in conjunction with additives conventionally used in intumescent compositions. For use in protecting substrates from heat and fire, the intumescent compositions may be applied to the substrate in any suitable manner, such as by electro-deposition, spraying onto an adhesive substrate, or application of a coating composition comprising the intumescent agent.

3,769,078
ARTICLE COATED WITH AROMATIC SULFONAMIDE INTUMESCENT AGENT
Shirley H. Roth, Highland Park, and Joseph Green, East Brunswick, both of N.J.
Filed Dec. 23, 1971, Ser. No. 211,636
Int. Cl. B44d *1/44*
U.S. Cl. 117—136 7 Claims

Coated articles of the invention are substrates coated with intumescent compositions which comprise certain aromatic sulfonamides bearing a nuclear substituent which is linked to the aromatic ring through a nitrogen atom. Exemplary of the intumescent agents are p-aminobenzenesulfonamide, p-acetamidobenzenesulfonamide, and the corresponding naphthalenesulfonamides.

3,769,079
PROCESS FOR PROTECTING A SUBSTRATE FROM HEAT AND FIRE
Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.
Filed Jan. 21, 1972, Ser. No. 219,875
Int. Cl. C09d *5/18*
U.S. Cl. 117—136 5 Claims

The invention relates to a process for protecting substrates with intumescent compositions comprising certain arylsulfonylureas, such as p-amino-benzenesulfonylurea, p-aminobenzenesulfonylthiourea, etc. The intumescent agents may be employed in conjunction with additives conventionally used in intumescent compositions.

3,769,080

PROCESS FOR COATING A SUBSTRATE WITH A NITROARYL-SULFONAMIDE-SUBSTITUTED TRIAZINE INTUMESCENT AGENT

Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.

Filed Jan. 21, 1972, Ser. No. 219,876
Int. Cl. C09d 5/18
U.S. Cl. 117—136 **3 Claims**

Intumescent compositions of the invention comprise nitroarylsulfonamido-substituted 1,3,5-triazines, such as 2-(p-nitrobenzenesulfonamido)-4,6-diamino-1,3,5-triazine. The intumescent agents are employed in a process for protecting a substrate from heat and fire. The intumescent agents may be employed in conjunction with conventional additives.

3,769,081

PROCESS FOR COATING A SUBSTRATE WITH AN AMINOARYLSULFONAMIDE-SUBSTITUTED TRIAZINE INTUMESCENT AGENT

Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.

Filed Jan. 21, 1972, Ser. No. 219,877
Int. Cl. B44d 1/22
U.S. Cl. 117—136 **6 Claims**

Intumescent compositions of the invention comprise aminoarylsulfonamido-substituted 1,3,5-triazines, such as 2-(p-aminobenzenesulfonamido)-4,6-diamino-1,3,5-triazine, 2-(p-acetamidobenzene-sulfonamido)-4,6-diamino-1,3,5-triazine, 2,4-bis(p-aminobenzenesulfonamido)-6-amino-1,3,5-triazine, and 2,4,6-tris(p-aminobenzenesulfonamido)-1,3,5-triazine. The intumescent agents are employed in a process for protecting a substrate from heat and fire. The intumescent agents may be employed in conjunction with conventional additives.

3,769,082

PROCESS FOR COATING A SUBSTRATE WITH A SULFONAMIDE-SUBSTITUTED TRIAZINE INTUMESCENT AGENT

Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.

Filed Jan. 21, 1972, Ser. No. 219,878
Int. Cl. C09d 5/18
U.S. Cl. 117—136 **5 Claims**

Intumescent compositions of the invention comprise sulfonamidoarylamino-substituted 1,3,5-triazines, such as 2-(p-sulfonamidoanilino)-4,6-diamino-1,3,5-triazine, 2,4-bis(p-sulfonamidoanilino-6-amino-1,3,5-triazine, and 2,4,6-tris(p-sulfonamidoanilino)-1,3,5-triazine. The intumescent agents are employed in a process for protecting a substrate from heat and fire. The intumescent agents may be employed in conjunction with conventional additives.

3,769,083

PROCESS FOR PROTECTING A SUBSTRATE WITH AN ARYLSULFONAMIDOPYRIDAZINE INTUMESCENT AGENT

Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.

Filed Feb. 11, 1972, Ser. No. 225,660
Int. Cl. C09d 5/18; C09k 3/28
U.S. Cl. 117—136 **4 Claims**

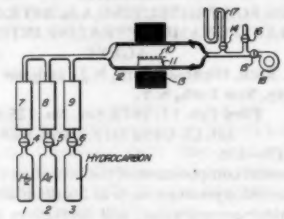
Intumescent compositions of the invention comprise certain arylsulfonamidopyridazines, such as 3-sulfanilamidopyridazine and derivatives thereof. The intumescent agents may be employed in conjunction with additives conventionally used in intumescent compositions. For use in protecting substrates from heat and fire, the intumescent compositions may be applied to the substrate in any suitable manner, such as by electro-deposition, spraying onto an adhesive substrate, or the application of a coating composition comprising the intumescent agent.

3,769,084

METHOD FOR FORMING CARBON COATING AND COMPOSITE ARTICLE WITH A CARBONACEOUS COATING THEREON

Tadashi Saito, and Tetsuo Gejyo, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 23, 1969, Ser. No. 887,678
Claims priority, application Japan, Dec. 25, 1968, 43/94551
Int. Cl. B44d 1/14, 1/18; C01b 31/00
U.S. Cl. 117—216 **10 Claims**



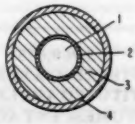
A carbon coated layer having good property for controlling the secondary electron emission and electron reflecting effect is deposited on a metal article surface having an amorphous nickel layer plated thereon by heating at a temperature of from 500 to 680°C in an atmosphere containing at least one hydrocarbon gas selected from the group consisting of acetylene, ethylene, ethane and propane having a partial pressure of 5 to 50 Torr.

3,769,085

INSULATED CABLE HAVING AN INSULATING SHIELDING LAYER

Hironaga Matsubara, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed June 14, 1971, Ser. No. 152,800
Claims priority, application Japan, June 30, 1970, 45/58638
Int. Cl. B44d 1/18; H01b 3/30
U.S. Cl. 117—218 **5 Claims**



An insulated cable having a cross-linked insulating layer and a cross-linked semiconductive insulation shielding layer, said layers having been formed by extrusion-coating simultaneously a composition for the insulating layer mainly composed of a polyolefin type polymer, such as polyethylene or a polyethylene copolymer and containing di-α-cumyl peroxide as the cross-linking agent and a composition for the semiconductive outer layer mainly composed of a polyolefin type polymer such as polyethylene or a polyethylene copolymer containing carbon black for providing the semiconductivity to said layer and 2,5-di-methyl-2,5-di-(t-butylperoxy)-hexyne-3 as the cross-linking agent and then cross-linking the layers by heating.

3,769,086

POROUS, ELECTRICALLY CONDUCTIVE MEMBER

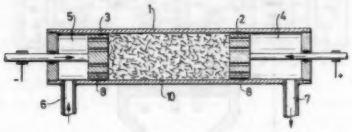
Herman J. Schladitz, Munich, Germany, assignor to Schladitz, Whiskers A. G., Gartenstrass, Switzerland

Filed Nov. 8, 1971, Ser. No. 196,339

Claims priority, application Germany, Nov. 13, 1970, P 20 55 927.7

Int. Cl. B44d 1/20; C23c 13/00

U.S. Cl. 117—228 2 Claims



A porous electrically conductive member particularly suitable for forming an electrical heating element is formed by coating thin filaments with electrically conductive metal, cutting them into short lengths or fibres and piling the fibres into a felt-like mass. This is made into a cohesive element preferably by further metal deposition which adds another coating to make the fibres adhere at their points of contact, although sintering or other methods can be used.

3,769,087

FERROMAGNETIC CHROMIUM DIOXIDE CRYSTALS

Bernd Leutner, Maxdorf; Matthias Schwarzmann, Lim-Burgerhof, and Manfred Ohlinger, Ludwigshafen, all of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Apr. 18, 1972, Ser. No. 245,272

Int. Cl. C01g 37/02; H01f 10/02

U.S. Cl. 117—234 6 Claims

The invention relates to ferromagnetic chromium dioxide crystals which are particularly suitable as magnetic pigments for magnetic recording media and whose surface, for the purpose of stabilization, is protected with antimony or arsenic compounds which are sparingly soluble in water, and to a process for the production of chromium dioxide crystals thus stabilized by the precipitation of antimony or arsenic compounds which are sparingly soluble in water.

3,769,088

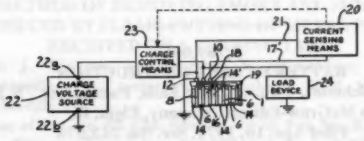
RECHARGEABLE BATTERIES AND CHARGE CONTROL CIRCUIT THEREFORE

Harvey N. Seiger, East Brunswick, N.J., and Paul F. Ritterman, Huntington, N.Y., assignors to Gulton Industries, Inc., Metuchen, N.J.

Filed Aug. 12, 1968, Ser. No. 752,024

Int. Cl. H01m 35/00

U.S. Cl. 136—3 2 Claims



A dry cell battery system comprising: a sealed battery capable of being repeatedly charged and discharged and including a sealed casing having exposed negative and positive terminals, positive and negative battery plates within said casing and electrically connected respectively to said positive and negative terminals, said negative battery plate having a negative potential in the range of about from minus 0.7 to minus 0.9 volts and an electrolyte within said casing forming with said positive and negative battery plates a rechargeable electro-chemical system which generates substantial quantities of hydrogen during the overdischarging thereof and during the high rate charging thereof at a low temperature, a circuit connected to the battery for operating the battery under one of said conditions which generates substantial quantities of hydrogen; and a porous platinum group metal electrode in said battery which is connected through a low impedance path to said negative terminal for absorbing said substantial quantities of hydrogen.

3,769,089

PRIMARY ELECTROCHEMICAL CELL

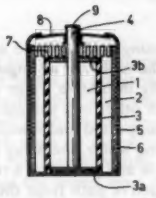
Joris Jan Cornelis Oomen; Frans Cornelis Romeijn, and Gunther Schwandt, all of Emmasingel, Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Filed July 8, 1971, Ser. No. 160,607

Claims priority, application Netherlands, July 8, 1970, 7010059; June 29, 1971, 7108934

Int. Cl. H01m 21/00

U.S. Cl. 136—83 R 14 Claims



A primary electrochemical cell consisting of a cathode half-cell in which a halogenate is used as a depolarizer, and an anode half-cell in which phosphorus is used as a reactant and also a mediator which enhances the conversion of phosphorus into phosphoric acid.

3,769,090

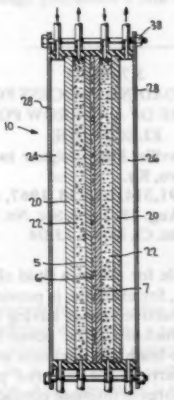
ELECTROCHEMICAL CELL

Murray Katz, Newington, and James K. Stedman, Glastonbury, both of Conn., assignors to United Aircraft Corporation, Hartford, Conn.

Filed Aug. 18, 1971, Ser. No. 172,654

Int. Cl. H01m 27/00

U.S. Cl. 136—86 R 16 Claims



A compact electrochemical cell utilizing a circulating electrolyte in which the anode and cathode are very closely

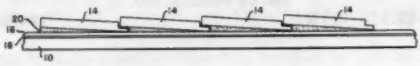
spaced, decreasing the internal resistance of the cell, is described. The cell comprises in spaced relation a reactant chamber, a gas (bubble) distributor, an electrolyte chamber, a first electrode which is flooded with electrolyte, an electrolyte chamber, a second electrode, and a second reactant chamber. The advantages of a circulating electrolyte are achieved while permitting the use of electrodes and electrode separators having low or zero bubble pressures and while maintaining the internal resistance of the cell low.

3,769,091

SHINGLED ARRAY OF SOLAR CELLS

Charles Z. Leinkram, Bowie, Md., and William D. Oaks, Midland, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 31, 1972, Ser. No. 239,869
Int. Cl. H01l *15/02*
U.S. Cl. 136—89 **8 Claims**



A method of mounting solar cells in an array, and a solar cell array, in which the cells are arranged on thermally conductive but electrically insulative wafer and prominences so that they overlap each other in a shingled structure but their bottom surfaces are supported and remain parallel to the top surface of the mounting wafer, the array structure permitting series wiring of the cells and providing a rugged structure having a thermally conductive path from the solar cells through the mounting elements.

3,769,092

NON-AQUEOUS ELECTROLYTES

Victor Louis Dechenaux, Poitiers, France, assignor to Societe Des Accumulateurs Fixes Et De Traction (Societe Anonyme), Romain Ville, France

Filed July 14, 1971, Ser. No. 162,535
Claims priority, application France, Aug. 7, 1970, 7029335
Int. Cl. H01m *11/00*
U.S. Cl. 136—100 R **10 Claims**

Non-aqueous electrolytes for use in electrochemical cells with a lithium anode and metal sulfide or metal oxide cathode such as copper sulfide or copper oxide. The electrolyte is a purified solvent such as tetrahydrofuran or a purified mixture of tetrahydrofuran and dimethoxyethane with dehydrated lithium perchlorate solute and a stabilizing agent such as triethyl or tributylphosphite.

3,769,093

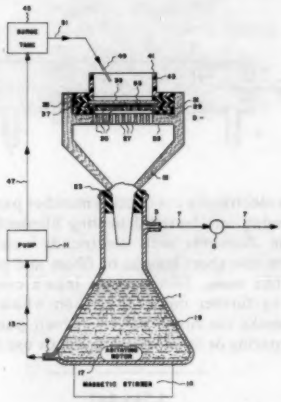
VACUUM LOADING PROCESS FOR THE MANUFACTURE OF A NARROW PORE FLUID ELECTRODE

Paul W. Jones, Gainesville, Fla., assignor to General Electric Company, Owensboro, Ky.

Division of Ser. No. 691,314, Dec. 18, 1967, abandoned. This application Aug. 21, 1970, Ser. No. 66,020
Int. Cl. H01m *13/04*
U.S. Cl. 136—120 FC **8 Claims**

An electrode suitable for use as a fluid electrode in a fuel cell or a metal-air cell, for example, is provided comprised of an electronically conductive carrier having narrow pores extending through its thickness. The pores have an average diameter less than one-tenth the thickness of the carrier. In a preferred form the carrier is a sintered plaque. An electrocatalyst lies in the pores in intimate contact with the carrier and a hydrophobic material lies in the pores and overlies the electrocatalyst. The hydrophobic material is uniformly distributed in the pores.

In another aspect my invention is directed to process of manufacturing a hydrophobic fluid electrode. A finely divided particulate electrocatalytically active material is dispersed in water and delivered to one face of a carrier while a vacuum is drawn adjacent the opposite face. The aqueous dispersion is passed through until the desired level of electrocatalyst loading is achieved, and the loaded carrier is then impregnated with hydrophobic agent. The hydrophobic agent is cured by heating to complete formation of the electrode. In a preferred technique the aqueous dispersion is continuously recirculated through the carrier to make maximum utilization of the dispersed electrocatalyst. Preferably the carrier is compressed after loading but before wetproofing.



3,769,094

METHOD FOR PRODUCING FUEL CELL ELECTRODES HAVING HIGH ACTIVITY

Detlef Baresel, Berlin, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 25, 1971, Ser. No. 109,544
Claims priority, application Germany, Feb. 6, 1970, P 20 05 395.6
Int. Cl. H01m *13/04*
U.S. Cl. 136—122 **4 Claims**

Very active fuel cell electrodes are produced by intimately mixing finely comminuted carbides, nitrides or silicides of transition elements of groups IV to VII with a graphite compound or a finely comminuted organic compound which can be pyrolyzed to graphite, decomposing the graphite compound or organic compound while in contact with the carbide, nitride or silicide, and shaping the products into a fuel cell electrode.

3,769,095

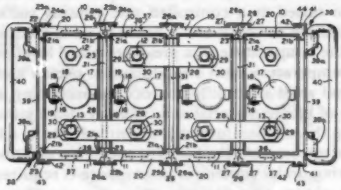
BATTERY CASE CONSTRUCTION

Jacob E. Schmidt, Twp. of Little Falls, Passaic Cty., N.J., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Apr. 10, 1972, Ser. No. 242,670
Int. Cl. H01m *1/02*
U.S. Cl. 136—166 **6 Claims**

A battery case assembly accomodating any desired number of individual cell containers of rectangular metallic construction comprises plastic side cover plates on the individual containers having interengaging flanged edges fitting between the containers. The successive side cover plates are locked together by clasps hooked into undercut edges along the flanged sides of the plates. Tie bars between containers are anchored at their ends in the side cover plates to prevent bulg-

ing of the side cover assembly, and metal bosses extending from the sides of the containers engage openings in the side



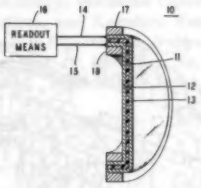
cover plates to permit the cells to be picked up by handles secured to the side cover assembly.

3,769,096

PYROELECTRIC DEVICES

Arthur Ashkin, Rumson; John George Bergman, Jr., Morganville, and James Hoffman McFee, Colts Neck, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 12, 1971, Ser. No. 123,725
Int. Cl. H01c 7/08
U.S. Cl. 136—213 **1 Claim**



Sensitive pyroelectric detectors are readily fabricated from thin films of organic polymer materials having net dipolar moments. Such materials, exemplified by polyvinylidene fluoride, are prepared for use by mechanical working so as to produce crystallographic alignment and by electrical poling so as to produce dipolar orientation. Depending upon a variety of factors such as molecular weight, operating temperature, etc., remanent polarization may be sufficient to permit discontinuance of poling during use.

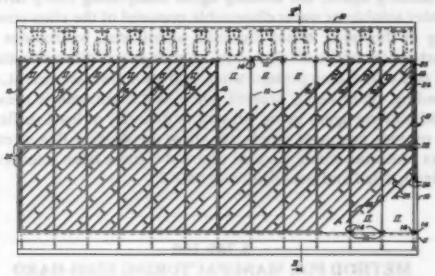
3,769,097

METHOD OF REMOVING SMOKE AND FUMES PRODUCED BY FLAME CUTTING OF METAL PLATES RECEIVED ON A BURNING TABLE

Joseph J. Walters, and Verdun R. McGibbon, both of Coatesville, Pa., assignors to Lukens Steel Company, Coatesville, Pa.

Division of Ser. No. 88,876, Nov. 12, 1970, Pat. No. 3,701,514. This application June 8, 1972, Ser. No. 260,751
Int. Cl. B23k 7/02
U.S. Cl. 148—9 R **20 Claims**

The combination of a table for cutting steel plate and an exhaust system for evacuating the fumes and smoke produced by the cutting operation. The expendable grating of the cutting table utilizes bars which are diagonal to the usual cutting directions and are connected by staggered stiffening bars also diagonally located so that the bars are not normally cut along their longitudinal axis. Duct work under the grating comprises heavy vertically extending removable plates resting on edge which additionally provide support for the grating and lead to an elongated exhaust manifold channel having a plurality of openings and a normally closed plate covering each of such openings. The openings are disposed in a horizontal dividing plate and communicate with the space formed between each of the vertically extending plates making up the ductwork under the grating. The cover plates are hinged and raised from a horizontal position by a pneumatic cylinder actuated through a photoelectric cell which is responsive to light from



plasma of the cutting torch. The photoelectric cell further actuates adjacent cover plates on either side of the cover plate which corresponds to the duct with which the photoelectric cell involved is aligned. Each hinged cover plate has a deep lip soft sealed ring which seats on the peripheral surface of the dividing plate about the corresponding opening and the arrangement is such that the fumes must make a 90° turn prior to entering the opening which slings out heavy particles which then drop to the bottom of the exhaust chamber for easy removal.

3,769,098

PROCESS OF MANUFACTURING FINE POWDERS OF METAL HALIDE

Norio Kanetake, Tokyo; Ikuo Maruyama, Kawasaki, and Katsuyuki Morita, Fujisawa, all of Japan, assignors to Kabushiki Kaisha Kito, Kanagawa-ken, Japan

Filed May 19, 1971, Ser. No. 144,809
Int. Cl. C23f 7/24
U.S. Cl. 148—6.24 **8 Claims**

An improved process for protecting metals against corrosion and wear comprises depositing a coating of metal halide or sulfide as a fine powder in a dry system to the metal surface to be protected in a dry system substantially free from moisture and carbon. Also, provision is made for making finely divided, dry metal halides and sulfides, such as chromium chloride and chromium sulfide which are suitable for use as lubricants and wear-proof and corrosion-proof agents for metals.

3,769,099

BONDED ARC WELDING FLUX AND LIQUID BINDING AGENT THEREFOR

William T. DeLong; Edwin R. Szumachowski, and Harold R. Heverly, all of c/o The McKay Company, 1005 Liberty Ave., Pittsburgh, Pa.

Filed Oct. 13, 1970, Ser. No. 80,507
Int. Cl. C23c *1/08*
U.S. Cl. 148—26 2 Claims

Arc welding flux comprising finely divided flux material and a binding agent, the binding agent comprising finely divided water soluble or water dispersible material of the class consisting of fluorides, mixed fluoride, aluminates, hydroxides and carbonates of the alkali metals, at least one additional material of said class being present when said aluminate is present, said binding agent being present when said aluminate is present, said binding agent being present in quantity at least sufficient to provide adequate bond strength in the welding flux after the flux material, binding agent and water have been intensively mixed, dried and baked at from 650° F.

3,769,100

METHOD FOR MANUFACTURING SEMI-HARD MAGNETIC MATERIAL

Hisashi Watanabe; Ryuji Watanabe, and Hiroshi Teramoto, all of Tokyo, Japan, assignors to Akai Electric Company Limited, Tokyo, Japan

Filed Sept. 10, 1971, Ser. No. 179,550
Claims priority, application Japan, Sept. 11, 1970, 45/79795; Oct. 5, 1970, 45/87272
Int. Cl. C21l *1/00;* H01f *1/00*
U.S. Cl. 148—126 6 Claims

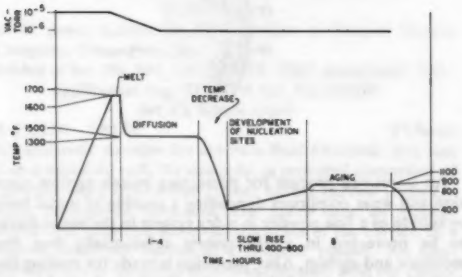
Semi-hard magnetic Fe-Mn system alloys, prepared by powder metallurgical methods, are subjected to cold working and subsequent heat treatment to obtain a product of superior magnetic properties and relatively constant magnetic characteristics, as compared to those products prepared by conventional casting methods. The properties of these magnetic alloys render them suitable for use in hysteresis motors, mechanical channel elements employed in electrical communication systems and the like.

3,769,101

LIQUID INTERFACE DIFFUSION METHOD OF BONDING TITANIUM AND TITANIUM ALLOY HONEYCOMB SANDWICH PANEL STRUCTURE

James R. Woodward, El Cajon, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Continuation-in-part of Ser. No. 765,156, Oct. 4, 1968. This application June 28, 1971, Ser. No. 157,560
Int. Cl. C22f *1/18;* B23k *35/30*
U.S. Cl. 148—127 14 Claims



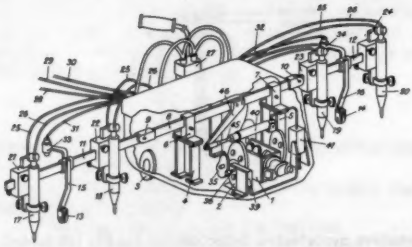
A liquid interface diffusion process, for bonding titanium or titanium alloys wherein at least one of the titanium type materials to be fayed is sequentially plated with a total weight of from between 1 and 3 gms/ft² of at least three selected metals or an alloy made therefrom. The faying surfaces are then held together to maintain position on alignment, placed in a protective atmosphere, the temperature of the materials are then raised at a controlled rate causing sufficient solid state diffusion to occur and a liquid to form continuing to increase the temperature to a pre-determined level and holding at this temperature until a solidification occurs and sufficient additional solid state diffusion occurs producing a desirable dilution of bridge material and titanium at the joint, and then reducing the temperature at a controlled rate to a lower temperature to complete the bonding cycle. An additional step of heat curing under protective atmosphere is required after the bonding of beta type titanium alloys, for providing additional precipitation sites and precipitation of the alpha phase for strengthening of the basis materials.

3,769,102

METHOD FOR LEVELLING THE DECKS OF SHIPS

Jacques J. Godin, Triel-Sur-Seine, and Jacques A. Stephan, Nantes, both of France, assignors to Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges Claude

Continuation of Ser. No. 883,720, Dec. 10, 1969, abandoned.
This application July 21, 1972, Ser. No. 273,907
Claims priority, application France, Dec. 20, 1968, 68179430
Int. Cl. C21d *1/52*
U.S. Cl. 148—130 4 Claims



A method and apparatus for levelling buckled deck plates on ships. A wheeled carriage is motor driven across a deck plate and carries a transverse arm on which blowpipes for heating the plate are disposed. Atomizer nozzles are disposed on the arm between and behind the blowpipes. Cam controlled means are provided for axially shifting the arm at predetermined intervals whereby the linear areas heated by the blowpipes are thereafter rapidly cooled by the atomizer sprays to shrink the plate and restore a level surface.

3,769,103

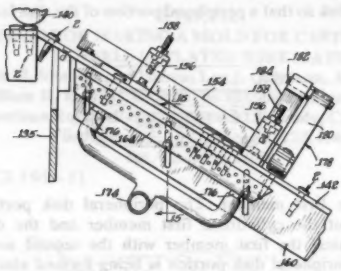
METHOD OF HEAT TREATING ARTICLES

Charles H. Wardwell, and Norman L. Holcomb, both of South Dartmouth, Mass., assignors to Research Engineering & Manufacturing, Inc., New Bedford, Mass.

Filed Mar. 25, 1971, Ser. No. 128,040
Int. Cl. C21d *9/22*
U.S. Cl. 148—147 7 Claims

An article is hardened or tempered in a localized zone. Where the article is a thread-forming device the zone is that part of its thread that does the thread-forming in the workpiece. The hardness of the remainder of the body of the article is left unchanged. The localized hardening is carried out by a method that includes high frequency induction heating only of the zone followed by quenching of the zone whereby the hardened zone is a skin of predetermined depth. A machine

for making articles in accordance with the method comprises means for delivering the articles in succession to an induction heating element, a mechanism for advancing the articles through the heating element for progressive heating of the surface of the article in the localized zone to a predetermined depth, a quenching manifold for applying a spray of quenching liquid to the heated article, and means for removing the heated articles from the heating element and conveying them to the quenching manifold.



3,769,104

METHOD OF PREVENTING AUTODOPING DURING THE EPITAXIAL GROWTH OF COMPOUND SEMICONDUCTORS FROM THE VAPOR PHASE

Yuichi Ono, Kokubunji; Masahiko Ogirima, Tokyo; Hiroyuki Kasano, Akishima, and Kazuhiro Kurata, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1971, Ser. No. 125,943

Claims priority, application Japan, Mar. 27, 1970, 45/25276

Int. Cl. H01l 7/36; C23c 11/00

U.S. Cl. 148—175 **9 Claims**

A method of epitaxially growing compound semiconductors from the vapor phase, wherein a dual layer of an insulating glass layer, such as SiO_2 or Si_3N_4 and Si is deposited on the entire surface of a germanium or III–V compound semiconductor substrate by a chemical vapor phase deposition method, the dual layer on the germanium or III–V compound semiconductor substrate surface is mechanically removed, and then a compound semiconductor is epitaxially grown on the substrate surface.

3,769,105

PROCESS FOR MAKING AN INTEGRATED CIRCUIT WITH A DAMPING RESISTOR IN COMBINATION WITH A BURIED DECOUPLING CAPACITOR

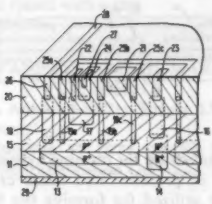
Charles Y. Chen, Putnam Valley; Vir A. Dhaka, and Walter F. Krolikowski, both of Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 5,453, Jan. 26, 1970, Pat. No. 3,619,735. This application Apr. 12, 1971, Ser. No. 133,402

Int. Cl. H01l 7/36, 19/00

U.S. Cl. 148—175 **5 Claims**

An integrated circuit and process for making it wherein a decoupling capacitor is provided beneath devices in the surface of the integrated circuit by the formation of a first epitaxial layer between an N^+ substrate having a P^+ zone diffused therein and an N^- device-containing epitaxial layer. A P^+ channel diffusion to the P^+ zone formed in the substrate will serve as a damping resistor in combination with the coupling capacitor. The process for forming such a decoupling capacitor in an integrated circuit comprises, inter alia, diffusing P^+ impurities into the substrate to form a large junction which will subsequently function as a decoupling capacitor. A first intrinsic, P^- or N^- epitaxial layer is then grown on the semiconductor substrate. Subsequently, an N^- epitaxial layer is grown on the first epitaxial layer. A P^+ channel is then driven through the N^- epitaxial layer and the first epitaxial layer to contact the P^+ diffused zone which serves as the decoupling capacitor. This P^+ channel diffusion will serve as a damping resistor in combination with the decoupling capacitor. Device diffusion, i.e., transistors, resistors, etc., will take place into the N^- epitaxial layer, and during growth of the epitaxial layers the P^+ zone will significantly outdiffuse into the first epitaxial layer. Appropriate channels, isolations and contacts are also provided.



3,769,106

IGNITER COMPOSITION

Harry J. Hyer, Los Gatos, Calif., assignor to United Aircraft Corporation, Hartford, Conn.

Filed Sept. 17, 1971, Ser. No. 181,641

Int. Cl. C06c 9/00

U.S. Cl. 149—18 **6 Claims**

An exothermic pyrotechnic composition suitable for the ignition of gas generating candles to be used for the generation of gases in a confined volume is disclosed. The incorporation of borax into a conventional iron-chlorate type igniter composition substantially reduces the propagation rate and causes the formation of a highly adherent slag. Taken together, these features reduce the likelihood of the igniter compound exploding from the surface of the material to be ignited and of the generation of gases from the ignited composition at a rate sufficient to overpressurize the volume.

3,769,107

PYROTECHNIC COMPOSITION FOR GENERATING LEAD BASED SMOKE

Duane M. Johnson, Bicknell, and Donald R. Hazelton, Winslow, both of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 28, 1968, Ser. No. 773,694

Int. Cl. C06d 5/06

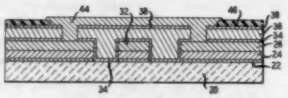
U.S. Cl. 149—19.6 **2 Claims**

A pyrotechnic composition comprising lead iodate, alkali iodate, boron, and epoxy resin which upon combustion generates a lead based smoke which can be used for artificial weather modification.

3,769,108
MANUFACTURE OF BEAM-CROSSOVERS FOR INTEGRATED CIRCUITS

David Feldman, Allentown; Nathan George Lesh, Bethlehem, and Walter Worobey, Center Valley, all of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 3, 1971, Ser. No. 204,546
Int. Cl. H05k 3/06
U.S. Cl. 156—3 3 Claims

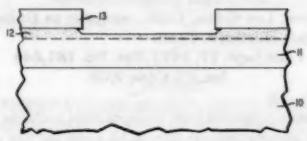


A prefabricated substrate for forming hybrid integrated circuits utilizes nests of prefabricated beam crossovers. Standardized masks are utilized for forming the beam crossover nests at fixed locations on the substrate. The metal spacing and support layer is retained under the beam crossovers while the subsequent pattern generation steps, such as defining the interconnection conductor pattern, are completed and the layer is then removed. Integrated circuit chips and lead frames are then mounted on the substrate to complete the hybrid integrated circuit.

3,769,109
PRODUCTION OF SiO_2 TAPERED FILMS

Alfred Urquhart MacRae, Berkeley Heights, and Robert Alan Moline, Gillette, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 19, 1972, Ser. No. 245,503
Int. Cl. H01l 7/50
U.S. Cl. 156—3 8 Claims



During SiO_2 etching, when the oxide surface etch rate is larger than the bulk etch rate and the photoresist adheres tenaciously to the surface, a near vertical wall or cusp will be formed. This will create potential fracture spots in sputtered or evaporated metal which covers the steps. In the fabrication of self-aligned gate IGFETs, where the gate material acts as a mask against either etching or ion implantation, holes in the step metal will allow regions under the nominal gate to be doped during the source-drain doping.

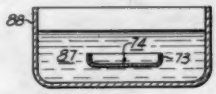
The slope of an etched step can be controlled by fabricating a double layer in which the top layer etches faster than the bulk. The specification describes the use of the enhanced etch rate of ion bombarded SiO_2 to generate controlled tapers on window openings.

3,769,110
DIAPHRAGM FOR LOW-PRESSURE TRANSDUCERS

Kjell E. Myhre, Sierra Madre, Calif., assignor to Micron Instruments, Inc., Los Angeles, Calif.

Filed May 14, 1971, Ser. No. 143,421
Int. Cl. B23p 15/00; C23f 1/00
U.S. Cl. 156—6 4 Claims

A method of making a substantially stress-free metal diaphragm for a diaphragm-type low-pressure transducer provides a disk of metal for the diaphragm, which disk has a first diameter, and provides a cylindrical first member for forming the diaphragm from this disk. This cylindrical member has a second diameter being smaller than the mentioned first diameter. A second member is provided for pressing the disk against the mentioned first member. The first member is placed relative to the disk so that a peripheral portion of the disk laterally



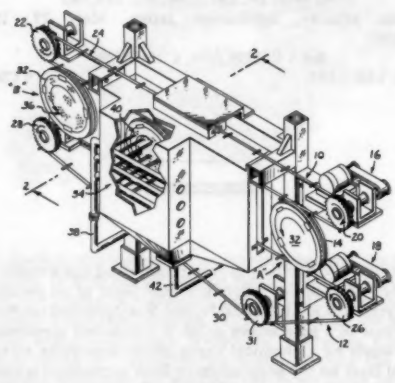
exceeds the first member. The peripheral disk portion is forced about the cylindrical first member and the disk is pressed against the first member with the second member while the peripheral disk portion is being formed about the cylindrical first member.

The disclosure also covers a substantially stress-free metal diaphragm for a diaphragm-type low-pressure transducer made by said method.

3,769,111
PROCESS AND APPARATUS FOR CHEMICAL MILLING

Joseph P. Lagermasini, Towanda, and Leadom A. Warner, Sayre, both of Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Division of Ser. No. 11,742, Feb. 16, 1970, Pat. No. 3,608,696.
This application Apr. 13, 1971, Ser. No. 133,525
Int. Cl. H05k 3/06
U.S. Cl. 156—5 2 Claims



An improved process for selectively etching a pattern into a base material by the photochemical method using a photoresist coating over the base material to enable the exposure of an etching solution to selected portions of the base material wherein the article to be etched is coated with the photoresist material and is thereafter continuously advanced and rotated at relatively uniform rates past a stationary spray of etching solution. A conveying system is also disclosed that is capable of simultaneously rotating and linearly advancing an article. The apparatus comprises a first and second spaced apart conveyor, the movable article carrier therebetween and in engagement with the conveyors and a driving means for each conveyor. The conveyors comprise a driving sprocket, an idler sprocket and an endless carriage in engagement with the sprockets. The endless carriage comprises a core and substantially equally spaced protrusions extending from each side of the core that engage the toothlike configuration of the periphery of each side of the sprockets. The carriages of each

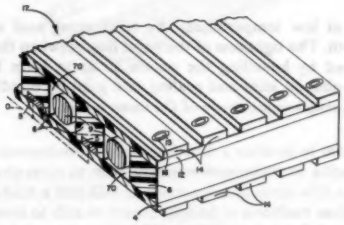
conveyor engages the article carrier to provide the linear movement. Differing the linear speeds or direction of travel of the two carriages enables variations in the rotational and linear movement of the article carrier.

3,769,112

METHOD FOR MAKING A MOLD FOR CASTING OPEN TUNNELS IN PLATED WIRE MATS

Joseph M. Shaheen, La Habra; Leo J. Quintana, Anaheim, and William R. Bennett, Orange, all of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Mar. 17, 1971, Ser. No. 125,156
Int. Cl. H05k *3/06*
U.S. Cl. 156—11 **9 Claims**



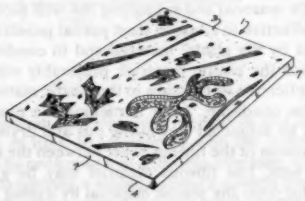
A series of processes are described for making mats to accommodate plated wire memory conductors. Certain of these mats also include interstitial conductors. Outer layers of metal are etched to form word-straps. These word-straps are orthogonal to the tunnels in the mats, which tunnels accommodate the plated wires. Interstitial conductors used, are generally connected to a common point. In order to provide ready access to these tunnels or channels for easy insertion of the plated wires therein, molds are made by either of two special processes, which molds have cavities therein for retaining resin to be molded into walls forming the aforesaid tunnels. The molds provided results in both instances when used in a molding machine and/or in a press, in the final product, wherein the tunnels are blocked off at either end by the plastic material which is also used to form the top and bottom of tunnels. This is done in order to prevent accumulations within the tunnels of undesired matter and thereby prevent blocking of the tunnels and prevent inhibiting the insertion of the plated wires. Therefore, by cutting off an end strip of the plastic material covering the tunnel entrances at both ends after completing of molding or forming operations, the tunnels thus provided are free and clear of undesired foreign matter.

3,769,113

METHOD OF ETCHING GLASS

Bernard E. Gruenke, Jr., Menomonee Falls, Wis., assignor to Conrad Schmitt Studios, Inc., Milwaukee, Wis.

Filed Apr. 1, 1971, Ser. No. 130,309
Int. Cl. C03c *15/00*
U.S. Cl. 156—24 **8 Claims**



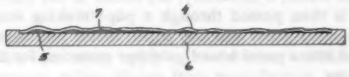
A method of etching glass, and particularly relatively large glass plates, to provide art form panels. A material resistant to acid, such as asphaltum, is applied to a surface of the glass plate with the exposed portion of the surface constituting the pattern to be etched. The backside and edges of the plate are masked with a coating of an elastomer covered with an acid resistant material, such as asphaltum. The panel is placed in a bath of hydrofluoric acid having a concentration of 20 percent to 30 percent with the surface to be etched facing downwardly. During the etching process the bath is maintained at a temperature of about 80°F and the panel is maintained in the bath for the desired period of time to obtain a deeply etched pattern. After etching the panel is removed, neutralized and rinsed with water.

3,769,114

METHOD OF AND SYSTEM FOR MAKING SYNTHETIC FOSSILS

Franz Weigert, Adalbert-Stifter-Strasse 13, D-8858, Newburg/Donau, Germany

Filed Feb. 17, 1971, Ser. No. 116,197
Claims priority, application Germany, Feb. 19, 1970, P 20 07 643.1
Int. Cl. B32b *31/00*
U.S. Cl. 156—59 **5 Claims**



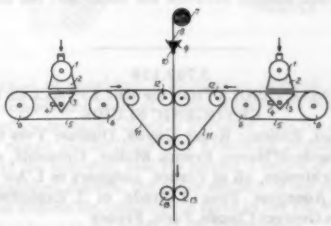
A method of producing relief reproductions of natural fossils, especially fossile birds of the Jurassic geological period, wherein a color-faithful image of the natural fossil is applied to a white paperboard surface which is screen printed with a white pattern corresponding to the bone and other hard-portioned patterns of the fossil. From the natural fossil, male and female die members are formed, faithful to the contours of the fossil and are used to emboss the paperboard in registry with the aforementioned image. The relief reproduction thus produced is cut out from the paperboard along the outline of the image and is attached to a natural stone slab, preferably by being recessed in a cavity of similar outline.

3,769,115

METHOD FOR THE PRODUCTION OF A FIBROUS SHEET MATERIAL

Torben Borup Rasmussen, Tousvej; Kjeld Dossing Ottosen, Holmevej, and Torsten Bengt Persson, Lystrup, all of Denmark, assignors to Karl Kristian Kobs Kroyer Vestre Kongevej, Aarhus-Viby, Denmark

Filed Nov. 14, 1968, Ser. No. 776,859
Claims priority, application Denmark, Nov. 15, 1967, 5701/67
Int. Cl. B32b *23/12*
U.S. Cl. 156—62.2 **4 Claims**



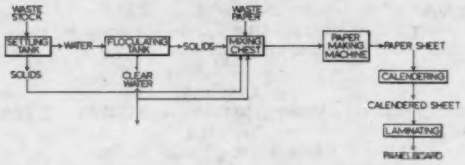
A method for the production of a fibrous sheet material by passing a stream of gas containing suspended fibres through a gaspermeable forming surface to form a fibrous layer thereon and bonding the fibres to each other or to a reinforcing material by means of a foamed binder.

3,769,116

METHOD OF MAKING A BUILDING MATERIAL FROM WASTE STOCK FROM A PAPERMAKING PROCESS

Charles A. Champeau, 1005 Lafollette St., Little Chute, Wis.

Filed Nov. 15, 1971, Ser. No. 198,808
Int. Cl. B32b *5/26*; D21f *1/82*, *11/04*
U.S. Cl. 156—62.8 10 Claims



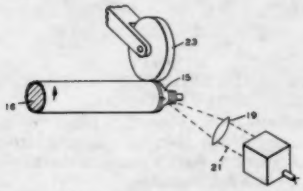
A method of making a building material, such as panel board, by utilizing waste stock from the papermaking industry. The major portion of the solids are separated from the waste stock by a settling treatment and the resulting effluent is subjected to floculation to separate the remaining solids. The solids are then blended together and additional cellulosic fibers and water, if necessary, are added to the mixture. The mixture is then passed through a papermaking machine to produce paper sheet and the paper sheets are subsequently laminated into a panel board, or other materials for the building industry.

3,769,117

LASER WELDING PLASTIC TUBES

William Edmund Bowen, Trenton, and Clifford Clayton Goehring, Princeton, both of N.J., assignors to American Can Company, Greenwich, Conn.

Filed Dec. 30, 1971, Ser. No. 214,311
Int. Cl. B29c *27/00*, *19/02*
U.S. Cl. 156—69 8 Claims



A method of welding a plastic end member to an unstepped, plastic tubular body which comprises positioning the end member within the body and then irradiating the area to be welded with a laser beam for a specified time sufficient to achieve the desired weld while simultaneously imparting relative rotational motion between the beam and the area to be welded.

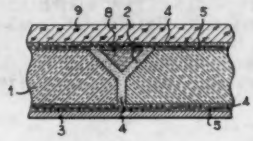
3,769,118

THERMAL INSULATION OF RECEPTACLES FOR CRYOGENIC FLUIDS

Henri Tariel, Rillieux; Roger Guyon, Oullins; Yves Gagneux, Saint-Martin-D'Heres; Franck Muller, Grenoble, and Yves Louis, Echirolles, all of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed Feb. 8, 1971, Ser. No. 113,245
Claims priority, application France, Feb. 13, 1970, 7005193
Int. Cl. E04b *2/00*
U.S. Cl. 156—71 4 Claims

This invention relates to the thermal insulation of reservoirs for cryogenic fluids with panels of a gas-tight thermal insulation material, bonded with an adhesive to the outer surface of the metal walls of said reservoirs. The tightness of the bond line between the tank wall and the insulating material is improved by uniformizing the material by heat curing, by coating the surface irregularities with an adhesive suited to a thick application at low temperatures, by reinforcing said adhesive with a cloth. The tightness of the bond line between the panels is improved by bevelling the panels so as to form between them a Y-shaped joint and sealing said joint by bonding a V-shaped closing tongue made of the same material.

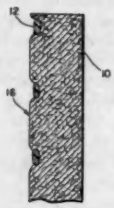


3,769,119

PRODUCTION OF EMBOSSED FIBROUS SHEETS

Louis R. Mizell, Chelmsford, Mass., and Mary S. Schur, Manassas, Va., assignors to I. W. B. Nominee Company Limited, London, England

Continuation of Ser. No. 745,759, July 18, 1968, abandoned.
This application Apr. 9, 1971, Ser. No. 132,815
Claims priority, application Great Britain, July 19, 1967, 33,123/67
Int. Cl. B32b *31/20*, *3/30*
U.S. Cl. 156—83 4 Claims



Composite fiber structures comprising a sheet of fibrous material having an open-patterned web of plastic material at least partially embedded in the fibers of the sheet are made by applying to at least one surface of a sheet of fibrous material, such as felted, knitted, woven or otherwise associated wool or other animal, vegetable or synthetic fiber, an open-patterned web of plastic material and subjecting the web successively to conditions effective to cause at least partial penetration of the fibrous sheet by the plastic material and to conditions effective to harden the plastic material, preferably with the concomitant application of pressure to the plastic material while it is in flowable condition. After hardening the plastic the assembly may be subjected to wetting out and drying to effect further expansion of the fibrous sheet between the elements of the plastic web. The fibrous material may be given a differential color from the plastic material by dyeing the fibrous material after the application of the web of plastic material or by applying to the fibrous sheet a web of differently colored plastic material.

3,769,120

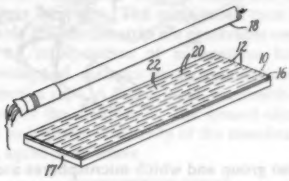
METHOD FOR MAKING THERMOPLASTIC NET-LIKE PRODUCT

Edmond A. Chandler, Northwood, N.H., assignor to Breveteam S.A., Fribourg, Switzerland

Division of Ser. No. 733,576, May 31, 1968, Pat. No. 3,616,152. This application May 21, 1971, Ser. No. 145,663

Int. Cl. B32b 3/10; B65b 53/06; B29f 5/00

U.S. Cl. 156—84 9 Claims



This invention is concerned with a method of thermoplastic polymeric resin or resin adhesive deposition or adhesive bonding in which a thin film of thermoplastic resin with a special arrangement of slits or cuts is applied to a surface and heat is applied to bring the resin to heat-softened condition and cause the film to assume a pattern directly related to the arrangements of slits or cuts. The invention also relates to the open pattern resin or resin adhesive sheet resulting from heating of the cut or slit film.

3,769,121

RETREADING OF TIRES

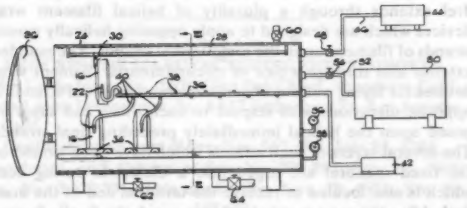
Aubrey Wilfred Martin, Heilbron, South Africa, assignor to Republic Rubber Industries (Proprietary) Limited, Heilbron, South Africa

Filed Apr. 26, 1971, Ser. No. 137,194

Claims priority, application South Africa, Dec. 18, 1970, 70/8547

Int. Cl. B29h 5/04, 17/36

U.S. Cl. 156—96 1 Claim



The invention provides for a method of and means for the retreading of tires. In accordance with the invention a tire is retreaded by enclosing it in a flexible envelope, sealing the envelope, establishing a higher pressure outside the envelope to force the envelope against the new tread and thereby to force the new tread against the tire casing, and raising the ambient temperature outside the envelope.

3,769,122

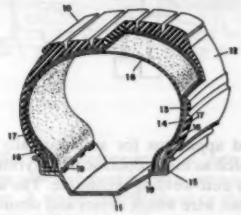
HALOGENATED BUTYL TUBELESS TIRE INNERLINER

David M. Coddington, Piscataway, and William D. Marsh, Cranford, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 859,241, Sept. 2, 1969, abandoned, which is a continuation-in-part of Ser. No. 723,525, April 23, 1968, abandoned. This application Apr. 27, 1971, Ser. No. 137,942

Int. Cl. B60c 21/08, 21/04

U.S. Cl. 156—115 13 Claims



Tubeless tire inner liners of butyl rubber or halobutyl rubber are formed by applying to the inner surfaces of such tire carcasses, either during their manufacture, or to previously made tires, i.e. new tire casings or used tire casings for retreading, a coating of the said rubber, as a sprayable, self-curing, or mild heat curing rubber cement, the rubber or blends of rubbers having a viscosity average molecular weight, in the case of a single rubber, or a calculated averaged viscosity average molecular weight, in the case of a blend of rubbers, of between about 28,000 and about 285,000, with the cement having a total solids content of between about 20 and about 80 wt. %, the remainder being organic solvent.

3,769,123

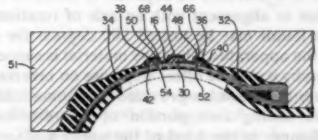
METHOD OF MAKING NON-CRACKING DECORATIVE SIDEWALLS OF TIRES

John W. Botts, Canton, and Charles W. Roberts, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 24, 1971, Ser. No. 127,482

Int. Cl. B29h 21/02

U.S. Cl. 156—116 6 Claims



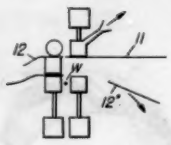
A method of providing a decorative sidewall in a tire in which a sub-surface layer of rubber is provided in the sidewall and a surface layer of rubber is provided over the sub-surface layer, a raised circumferentially extending continuous rib is formed in the sidewall, said rib having a series of discontinuous depressions therein; the outer surface of the rib is ground slightly to expose the sub-surface layer in the rib while leaving the surface layer in the bases of the depressions.

The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawings and the following detailed description.

3,769,124
METHOD AND APPARATUS FOR SPLICING FOAM SHEET MATERIAL

David Emil Johnson, Macedon, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 21, 1972, Ser. No. 236,766
Int. Cl. B31f 5/00; B65h 19/08
U.S. Cl. 156—159 3 Claims



A method and apparatus for automatically splicing foam sheet material, such as thermoplastic polystyrene foam, for example, utilizing a butt-welding technique. The apparatus comprises a moving hot wire which severs and simultaneously heat softens the leading edge of a new foam stock roll; and subsequently severs and heat softens the trailing end of a used roll, prior to bringing the heat softened ends of the rolls together, thereby forming a butt-weld.

3,769,125
METHOD FOR EMPLACING FILAMENT-SHAPED MATERIALS INTO THERMOPLASTIC MATERIALS AND PRODUCTS PRODUCED THEREBY

Walther Bethge, CH 4053 Burderholzstr., Basel, Switzerland

Division of Ser. No. 730,236, May 20, 1968, Pat. No. 3,635,777. This application Feb. 24, 1971, Ser. No. 118,226
Claims priority, application Germany, May 20, 1967, P 92
Int. Cl. B32b
U.S. Cl. 156—166 5 Claims

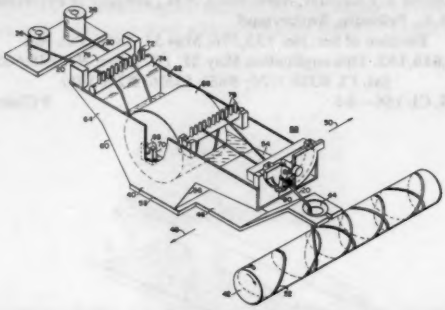
Apparatus and techniques for inlaying or emplacing filament-shaped materials such as wires or the like into a thermoplastic base material wherein the thermoplastic base material is heated to locally and temporarily soften the same following which the filament-shaped material is impressed thereinto. The apparatus includes a distributor having guide means thereon which receives the filament-shaped material from a source of the same, the lower portion of the guide means defining a sliding foot which is heated to soften the base material immediately before impressing the same with the filament-shaped material. The distributor is positioned at an angle with respect to the upper surface of the base material, the inclination of which may be adjusted to maintain the sliding foot portion in alignment with an axis of rotation about which the distributor may be turned 180 degrees for reverse movement of the apparatus. The base material is supported in a manner whereby it may be offset step-wise on reversal of the distributor. Sensing means are provided to automatically raise and lower the sliding foot portion of the distributor in response to changes in the level of the upper surface of the base portion. The distributor may be lifted and latched in a position spaced from the base material during temporary interruptions in emplacing the filament-shaped material into the base material.

3,769,126
RESINOUS-MICROSPHERE-GLASS FIBER COMPOSITE

Robert L. Kolek, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 30, 1970, Ser. No. 7,152
Int. Cl. B32b 31/12
U.S. Cl. 156—172 4 Claims

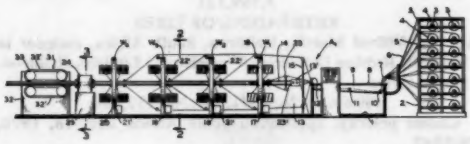
A low density, resinous filament-wound composite having fiber glass filaments embedded in a resinous matrix containing hollow glass microspheres whose surface is treated with a viscosity and bond improving agent such as a silane having at least one amino group and which microspheres are present in an amount of up to about 35 weight percent of the composite, whereby the composite has an improved weight-strength ratio.



3,769,127
METHOD AND APPARATUS FOR PRODUCING FILAMENT REINFORCED TUBULAR PRODUCTS ON A CONTINUOUS BASIS

William B. Goldsworthy, Palos Verdes Estates, and Ethridge E. Hardesty, Pine Valley, both of Calif., assignors to Goldsworthy Engineering, Inc., Torrance, Calif.

Continuation-in-part of Ser. No. 723,554, April 23, 1968, Pat. No. 3,579,402, which is a continuation-in-part of Ser. No. 633,146, April 24, 1967, abandoned. This application Mar. 18, 1971, Ser. No. 125,774
Int. Cl. B31c 3/00
U.S. Cl. 156—172 26 Claims



A device for making filament reinforced tubular products in a continuous manner. The device includes a series of filament spools. Filament from the spools is passed through a resin tank and around a fixed mandrel to form the longitudinal strands of the tube. The mandrel has substantially the same internal size and shape of the continuous tube to be produced. The mandrel extends through a plurality of helical filament wrap devices which are designed to apply opposing helically wound strands of filament upon the longitudinal strands. The mandrel extends also through a pair of circumferential filament wrap devices for laying outermost surface circumferential strands in opposite directions with respect to each other and superimposed upon the helical immediately preceding final strands. The several layers of such strands which have been wound on the fixed mandrel are urged into a dielectric curing zone which is also located to receive the terminal end of the mandrel. After the resin matrix has been cured, the finally formed and cured tube is pulled from the mandrel by a pulling unit.

A number of embodiments are disclosed for making continuously wound pipe. In another embodiment, the device is mounted on a moving vehicle such as a boat where continuously made pipe is deposited from the moving vehicle. In an additional embodiment of the invention, a rectangular mandrel is employed for wrapping tube-like sections having a somewhat rectangular cross section, capable of being used in the construction of ladder rails and similar structural elements.

3,769,128
METHOD OF PRODUCING SEMIPERMEABLE MEMBRANE ELEMENTS

Serop Manjikian, Del Mar, Calif., assignor to Universal Water Corporation, Del Mar, Calif.

Continuation-in-part of Ser. No. 818,514, April 23, 1969, Pat. No. 3,578,175. This application May 5, 1971, Ser. No. 140,583

Int. Cl. B01d *29/42*

U.S. Cl. 156—185 **4 Claims**

A membrane element for use in a reverse osmosis apparatus is produced by helically winding slightly wet or moist semipermeable membrane strip around the outside of a porous support structure. The contiguous turn edges of the semipermeable membrane strip are preferably overlapped and are sealed by interposition of autogenous bonding agent between overlapped surfaces or by application of pressure sensitive adhesive tape. A fabric layer, preferably double, may be wound under the membrane. The wound element may be heat treated to improve selectivity of the membrane and to set the bonding agent or adhesive.

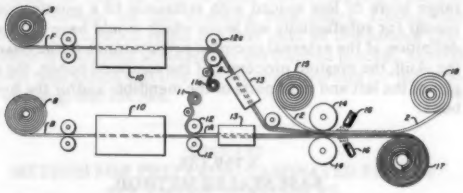
3,769,129
METHOD OF MAKING AN EMBOSSED COMPOSITE SHEET

Alvin R. Williams, Northfield, Ohio, assignor to United States Steel Corporation, Pittsburgh, Pa., The portion of the term of this patent subsequent to Sept. 30, 1988, has been disclaimed.

Filed Mar. 29, 1968, Ser. No. 717,206

Int. Cl. B44c *1/00*

U.S. Cl. 156—209 **6 Claims**



Method of making an embossed composite sheet including the steps of making an assembly of a base layer and a face layer with a layer of adhesive therebetween, heating the assembly to a temperature at which the adhesive is plastic, placing an embossing sheet having the desired pattern thereon on the face layer, and then exerting sufficient pressure on the embossing sheet while the assembled layers are so heated to impress the pattern on said face layer.

3,769,130
PROCESS FOR MANUFACTURING SHEET BINDERS

John Leslie Jones, Sr., 1070 Glen Oaks Blvd., Pasadena, Calif., and John Leslie Jones, Jr., 1447 Sutherland St., Los Angeles, Calif.

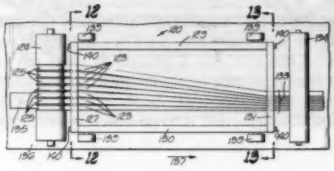
Continuation-in-part of Ser. Nos. 567,595, July 25, 1966, abandoned, and division of Ser. No. 799,887, Feb. 17, 1969, Pat. No. 3,620,891. This application Nov. 15, 1971, Ser. No 198,601

Ser. No. 198,601

Int. Cl. B32b *31/00*; **C09j** *5/00*

U.S. Cl. 156—259 **2 Claims**

This invention teaches binders, a manufacturing process and manufacturing apparatus for binders, sales receipts, checks, and like sheets of paper, the binders having thin film base sheets with at least two opposed edges, and having at least one pressure sensitive adhesive coating strip area extending over one strip section area of the base sheets, the adhesive coating strip area being coterminous with two opposed film base sheet edges. A multiplicity of release coated face, flexible, narrow strip backing sheets are arranged in parallel alignment with adhesive coating strip area, with the release coated faces of the strip backing sheets adjacent to and completely covering the adhesive coating strip area. The multiplicity of



strip backing sheets are coterminous at their strip ends with the coterminous adhesive coating strip area and the opposed base sheet edges. A single receipt sheet or the like is secured to a single narrow adhesive coating area, made available on the removal of a single strip backing sheet.

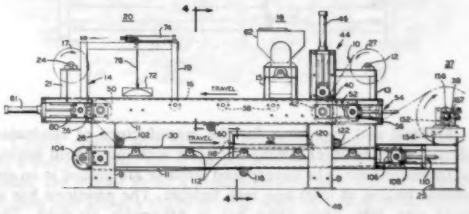
3,769,131
APPARATUS AND METHOD FOR LAMINATING FLEXIBLE LAYERS

Samuel Richard Genson, Weston, Ohio, assignor to Johns-Manville Corporation, New York, N.Y.

Filed May 3, 1971, Ser. No. 139,423

Int. Cl. B32b *31/12*

U.S. Cl. 156—283 **5 Claims**



A method and apparatus for laminating two layers of material wherein one of the layers of material is relatively frangible. The layers are bonded together by a heat sensitive binder which must be cooled to assure product integrity. The laminated product is conveyed through a cooling zone with the frangible layer in a protected position against an associated conveyor to militate against attrition of the frangible material.

3,769,132
METHOD OF INTIMATELY BONDING THERMOPLASTICS

Robert Dana Cram, Ipswich, Mass., assignor to High Voltage Engineering Corporation, Burlington, Mass.

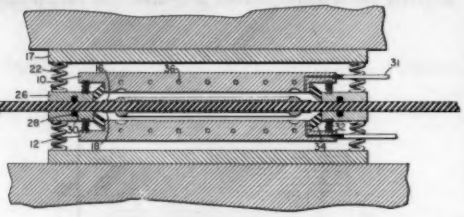
Filed Nov. 6, 1969, Ser. No. 874,515

Int. Cl. B29c *27/14*

U.S. Cl. 156—286 **12 Claims**

A process for intimately bonding a conducting or semicon-

ducting thermoplastic layer to a non-conducting thermoplastic substrate. The bond achieved between the two thermoplastic layers is devoid of gas and is particularly adaptable to high voltage insulation and capacitor applications.



3,769,133

METHOD FOR MANUFACTURE OF LAMINATED SHEET MATERIAL

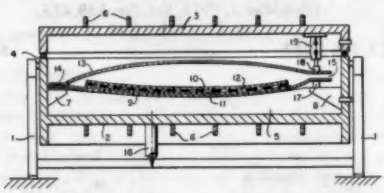
Friedrich Halberschmidt, Merkstein; Karl Heinz Linberg, Horbach; Werner Nuding, Ludwigsburg, and Hans Steffens, Aachen, all of Germany, assignors to Saint-Gobain, Neuilly-sur-Seine, France

Filed Aug. 31, 1970, Ser. No. 68,065

Claims priority, application Germany, May 21, 1970, P 20 24 781.8

Int. Cl. B32b *17/10*

U.S. Cl. 156—286 **12 Claims**



Method and apparatus for the manufacture of laminated sheets, such as outer laminae of glass with interposed lamina of thermoplastic. The superposed laminae are placed in an envelope having at least one wall flexible. The envelope has at least one side edge open but is otherwise air-tight. The laminae and envelope are placed in an evacuable chamber such as an autoclave. The air pressure is reduced to a few mm of Hg thus degassing the laminar sandwich. The open side edge of the envelope is then sealed while within the autoclave, under low absolute pressure. The assembly of envelope and laminae are then processed under heat and pressure, to unite the laminae into a unitary sheet. The processing may be done while the assembly remains in the autoclave. The completed sheet may be left in its envelope until removed for use.

3,769,134

MANIKIN CONSTRUCTION

Graydon C. Livingston, Los Angeles, Calif., assignor to Wolfe & Vine, Inc., Los Angeles, Calif.

Filed July 15, 1971, Ser. No. 163,021

Int. Cl. A41h *5/00*

U.S. Cl. 156—293 **11 Claims**

An integral manikin is made by securing an essentially neckless head to a substantially full length neck that is integrally formed with a supporting torso. The upper end of the neck terminates in a generally ovoid shoulder of compound curvature extending inwardly from the exterior surface of the wall of the neck, the shoulder surrounding an endless wall defining an indexing stub. The neckless head takes the form of a hollow shell formed with a downwardly and rearwardly facing opening in the shell wall whose edge defines a compound curvature complementary to that of the shoulder of the neck. In effect, the neck shoulder and the edge of the head opening are substantially faying surfaces having a common locus of non-planar compound curvature that girdles the exterior wall of the manikin along an endless path in the region of the juncture of the head and neck of the manikin. The common locus of the endless abutting surfaces is located with reference to a reference axis lying within the same plane as the plane of the median section of the head. In anatomical terms, this axis intersects the back of the neck in the region of the juncture of the supraspinous ligament and the occipital protuberance at the base of the skull. In the front of the neck, the axis intersects the mid-line in the region corresponding to the area of the laryngeal prominence up to and including the hyoid bone. In terms of anatomy, the common locus is selected within a range more or less spaced with reference to a geometrically similar (or substantially so) locus which would have points of definition at the external occipital protuberance at the base of the skull, the mastoid processes of the temporal bones, the angles of the left and right parts of the mandible and/or the hyoid bone.

3,769,135

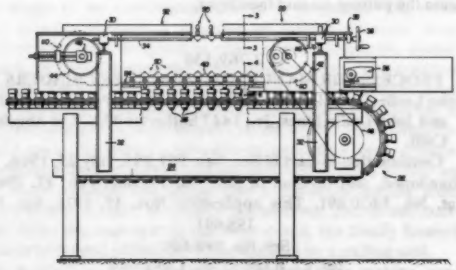
BASE SEALER METHOD

Frederick L. Wallington, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 57,200, July 22, 1970, Pat. No. 3,[illegible]5,980. This application Jan. 18, 1972, Ser. No. 218,702

Int. Cl. C09j *5/00*

U.S. Cl. 156—306 **3 Claims**



Method for sealing vent openings in the bottom of plastic base elements of composite containers. A series of heated sealing tips are linked together into an endless chain and driven along an endless path having one run which extends above a conveyor upon which the composite containers are conveyed in an inverted position. During their transit of this one run, the tips are engaged with the base elements to heat

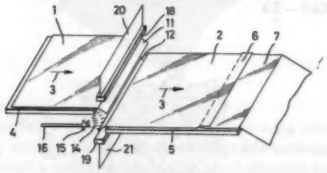
seal the vent openings. Regulation of the amount of heat applied to the base elements is achieved by maintaining the tip temperature within a predetermined range and contacting the tip and base element for a fixed time interval. The method includes a control over maintaining the contact time between tip and base element constant regardless of the conveyor speed.

3,769,136

SOLVENT BONDING OF PLASTIC SHEET MATERIAL

Edwin K. Ospelt, 9494 Vahaan 737, Schaan, Liechtenstein, Germany

Division of Ser. No. 624,462, March 20, 1967, Pat. No. 3,586,583. This application May 15, 1970, Ser. No. 48,661
Claims priority, application Germany, Mar. 24, 1966, P 39048
Int. Cl. B32b *31/12*; C09j *5/02*
U.S. Cl. 156—308 1 Claim



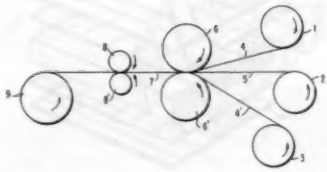
Sheets of plastics materials are automatically joined and solvent bonded or welded together by arranging two sheets to be joined together with the edges adjacent and overlapping, bending one edge up and the other down, spraying a plastics welding solvent on the opposing bent edges, closing and pressing the sprayed edges together until an inseparable connection is produced according to the claimed process. Several sheets thus joined together are suitable coverings for the roofs of buildings and the like.

3,769,137

METHOD FOR PREPARING LAMINATED FILM OF POLYMERIC SUBSTANCES

Yasuhiro Moriyama, and Takafumi Okamoto, both of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 26, 1971, Ser. No. 137,558
Claims priority, application Japan, Apr. 25, 1970, 45/35603; Oct. 8, 1970, 45/88975
Int. Cl. C09j *5/00*, *7/00*
U.S. Cl. 156—309 19 Claims



A method for preparing a laminated film of polymeric substances wherein each film layer constituting the laminate is closely surface bonded to each other, which method comprising heating, pressing and rolling between rollers a sandwich wherein both of the outer layers thereof are fluorocarbon resin films and at least one thermoplastic polymer is interposed therebetween as an inner layer or layers, said rollers being at a temperature not higher than the melting point of said fluorocarbon resin and not lower than 25°C.

3,769,138

APPARATUS AND A METHOD FOR PREPARING A COMPOSITE LAMINATED SHEET

Dante Robbiati, Via Dante 6, Bernareggio, Italy

Continuation-in-part of Ser. No. 446,186, April 7, 1965. This application Dec. 12, 1968, Ser. No. 783,198
Claims priority, application Italy, Dec. 14, 1964, 54,372
Int. Cl. B32b *7/00*
U.S. Cl. 156—310 4 Claims

A method for continuously producing a laminated composite sheet comprising at least two metal layers; the method comprising the steps of coating a very thin foil of a valuable metal with an adhesive medium and joining it under pressure to the face of a thicker metal sheet which has been prior to said joining, covered with a layer of thermoplastic material.

ERRATUM

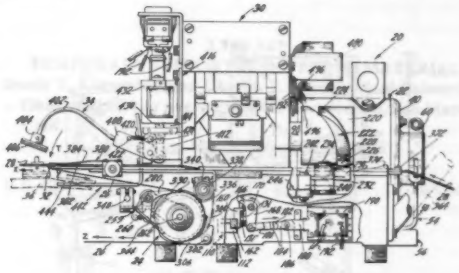
For Class 156—331 see:
Patent No. 3,769,376

3,769,139

LABELER

James E. Woods, Atlanta, Ga., assignor to Litton Business Systems, Inc., Belleville, N.J.

Continuation of Ser. No. 597,585, Nov. 29, 1966, abandoned. This application June 18, 1971, Ser. No. 154,687
Int. Cl. B65c *9/02*, *9/18*, *9/42*
U.S. Cl. 156—358 16 Claims



Labels, coated with pressure sensitive adhesive and carried by a web of release paper having formed therein feed sprocket holes, are drawn along a predetermined path through a print station and about a sharp reverse bend by a feed drum having disposed about the periphery thereof drive pins spaced to correspond to the spacing of the feed sprocket holes in the web of release paper. The feed drum is in turn driven by a solenoid actuated ratchet feed and may be readily replaced by other feed drums having drive pins spaced to correspond with the feed holes on webs of other sizes of labels. As the release paper is drawn about the sharp reverse bend the label projects outwardly and a hammer, solenoid actuated in timed relationship with the label feed, is driven against the label to slap the label against an article.

3,769,140

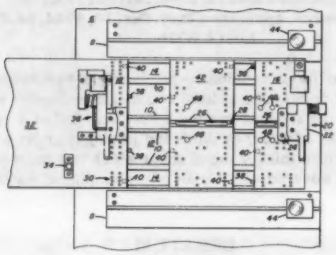
ADJUSTABLE WEB SPLICING DEVICE

Robert K. Sayer, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 4, 1972, Ser. No. 215,357
Int. Cl. B31f *5/00*; G03d *15/04*
U.S. Cl. 156—502 6 Claims

A laterally adjustable web splicing device for accommodating webs of varying width. The web splicing device comprises a stationary plate for supporting one edge of a pair of web

ends to be spliced together, and a movable plate laterally movable relative to the stationary plate for supporting the opposite edge of the web ends. The movable plate is movable between a first position, in which it abuts the stationary plate



and cooperates therewith to support web ends of one width, and second position, in which the movable plate is spaced from the stationary plate for supporting a web end of a wider width. In the second position, a web supporting insert plate is interposed between the stationary and movable plates.

3,769,141

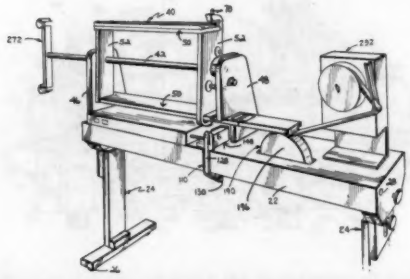
FILM STRIP SPLICING DEVICE

John M. Haugen, 9925 Davies Rd., Lake Stevens, and Herman L. Jones, 9805-64th N. E., Marysville, both of Wash.

Filed June 21, 1971, Ser. No. 155,265

Int. Cl. B65h *19/16, 19.08*

U.S. Cl. 156—504 **20 Claims**



A web splicing device for forming a continuous web of material from individual shorter strips which includes a rotatable reel-type strip carrier with multiple loading stations for receiving short strips to be spliced. The short strips are mounted or positioned in a flat condition axially along the reel at a loading station and the reel or carrier is then indexed to a second position where the strip is joint spliced for subsequent movement onto a web take-up reel. During movement of the reel the strip is automatically end trimmed on both ends and punched with an index hole. With the use of multiple strip loading stations on the reel, one strip may be spliced while a succeeding strip is being mounted on the film carrier. Once the strip has been cut, punched and joined, it is moved off the reel carrier automatically and the carrier again rotated and indexed for further loading and the succeeding strip is moved into splicing position.

In a specific embodiment, customer film strips are removed from rolls and/or cartridges and placed and identified with the image-bearing side up at a loading station extending axially along the rotatable reel. The reel is then rotated to a second position where the strip is heat spliced while a second strip of film is loaded on another station on the reel with cutting and necessary punching being accomplished as the strip is moved by rotation of the reel. Once a film strip has been cut, punched and spliced, it is automatically moved out of the carrier and the reel again rotated to position a succeeding strip for treatment, making available another loading station for another strip of film. Thus, as the customer's film strip is being placed in the loading position on the rotatable reel, splicing is occurring at another position with the reel being locked until splicing is completed. The spliced strip is moved clear of the reel to become part of a larger roll of film being joined together to form a commercial processing roll, all being undertaken conveniently in a dark room.

3,769,142

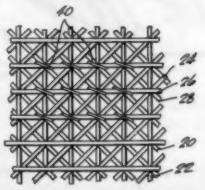
NON-WOVEN LOCKED PLY COMPOSITE STRUCTURE

Richard N. Holmes, Glendale, and Richard A. Dobbs, Orange, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Dec. 4, 1970, Ser. No. 95,113

Int. Cl. B32b *7/08, 5/12;* **F41h** *5/00*

U.S. Cl. 161—53 **3 Claims**



A non-prebuckled fibrous composite structure with multiple plies interlocked with vertical fiber locks through the plies to improve interlaminar shear characteristics of the composite structure.

3,769,143

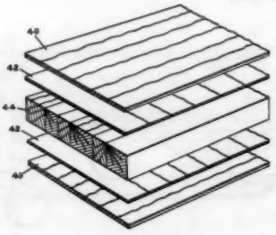
RESIN IMPREGNATED CELLULOSIC VENEER AND LAMINATED PANELS

Chester P. Kulesza, Suffern, N.Y., assignor to International Paper Company, New York, N.Y.

Filed Sept. 8, 1971, Ser. No. 178,701

Int. Cl. B32b *23/02, 31/00*

U.S. Cl. 161—156 **25 Claims**



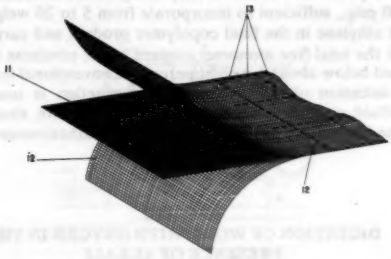
Cellulosic sheets are impregnated with resin modified cross-linkable urea-formaledehyde resins to provide veneers for furniture and wall panels which are sandable and printable. The resin modified urea-formaldehyde resin constitutes 20 to 75 percent by weight of the cellulosic or paper veneer. The resin modifiers are cross-linking vinyl and acrylic copolymers having chain-pendant methylol groups. Laminates are produced using the veneers of the invention.

3,769,144

QUILTED FABRIC CONTAINING HIGH SURFACE AREA CARBON FIBERS

James Economy, Eggertsville, and Ruey Y. Lin, Williamsville, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Mar. 24, 1972, Ser. No. 237,836
Int. Cl. B32b 7/08
U.S. Cl. 161—50 10 Claims



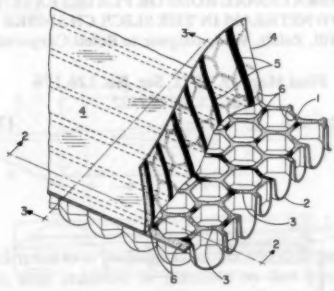
A quilted fabric containing high surface area carbon fibers is made by uniting a central layer of flexible activated carbon fibers between a pair of outer layers of reinforcing fabric, positioned on each side of the layer of activated flexible carbon fibers, with a network of quilting stitching. The quilted fabric thus made is useful for fabricating protective clothing or gas masks for use by personnel who must enter areas which may contain noxious gases, or for face masks for combatting the air pollution problem. The quilted fabric makes possible the use of spun yarns of activated carbon fabric which have, per se, low tensile strength, but which can be made more economically than continuous filaments of higher tensile strength.

3,769,145

REINFORCED PLASTIC CUSHIONING MATERIAL

James T. Gresham, and Louis J. Juracek, Jr., both of Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 3, 1971, Ser. No. 139,751
Int. Cl. B32b 3/12
U.S. Cl. 161—68 3 Claims



Cushioning material is formed of plural plies of thermoplastic sheet material heat bonded together in a particular manner to provide the material useful under moderate and high pressures. A first ply has cellular protrusions extending from one side. The second side carries a second sheet heat bonded to land areas of a grid bordering the openings of the protrusions. The second sheet has a pattern of a heat resistant lacquer on the side fronting the first sheet to prevent overall heat bonding of the land areas with the second sheet. The pattern is such as to provide that some land area surrounding each protrusion opening will be heat bonded while the remaining land area defining the protrusion opening will be free of bond with the second sheet so that air flow may occur between protrusions within the sheet structure.

3,769,146

LIGHT NON-INFLAMMABLE LAMINATES

Jean Ravel, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed May 23, 1972, Ser. No. 256,040
Claims priority, application France, May 25, 1971, 7118854
Int. Cl. B32b 5/00
U.S. Cl. 161—79 8 Claims

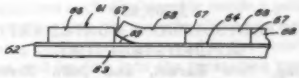
Non-inflammable laminates which on combustion give only small and non-toxic amounts of fumes and gases have a thin metal foil facing on an asbestos paper support and a core of glass fibre fabric, polyamide-imide fibre fabric, or polyimide fibre fabric, optionally with an asbestos fabric, the whole being bonded together with an organosilicon polymer or polyimide.

3,769,147

TEMPORARY SUPPORT FOR WEBBED MATERIAL

David T. Komendat, and Charles F. Reed, both of Painesville, Ohio, assignors to Avery Products Corporation, San Marino, Calif.

Filed Aug. 11, 1970, Ser. No. 62,886
Int. Cl. B32b 5/02, 27/30
U.S. Cl. 161—82 10 Claims



A temporary support for web materials is disclosed. Such support is normally provided to permit convenient handling or processing of a web. For example, webs that are so limp, fragile, subject to distortion, or otherwise mutable as to prevent them from being handled by normal handling and processing equipment are stabilized by a temporary support so that they may later be either restabilized by other means (such as a permanent backing web) before or at removal of the temporary support, or destabilized by removal of the temporary support. In other instances, relative stable articles such as labels, tags or the like may be temporarily supported for printing or other processing operations and subsequently removed for use. The temporary support includes a temporarily adherent web-contacting layer adapted to provide a temporary non-chemical bond with the web, and may also include a dimensionally stable base such as paper. The web-contacting layer may be directly bonded to the base or may be indirectly bonded thereto as by the use of an intermediate layer of pressure-sensitive adhesive. The web may be laminated to the temporarily adherent layer by heat and pressure and, after processing and handling, may be delaminated therefrom without residue by applying diverging forces.

3,769,148

FIBROUS SHEET MATERIALS AND FILTER ELEMENTS FORMED THEREFROM

George Edward Barlow, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 12, 1971, Ser. No. 188,463

Claims priority, application Great Britain, Oct. 12, 1970, 48,301/70

Int. Cl. A24d *1/06*; B32b *3/00, 3/30*

U.S. Cl. 161—123 3 Claims

The invention relates to fibrous sheet material comprising an absorbent, paper-like cellulose wadding in sheet form having an array of substantially aligned fibres bonded to one side thereof. The fibrous sheet material may be creped or corrugated. The fibres are heat bondable and are bonded to the cellulose wadding by a treatment comprising a heat treatment. The fibres may be bicomponent fibres wherein one component is a heat bondable component. The fibrous sheet material is compressible into rod-like filter elements which are particularly applicable as cigarette filters.

3,769,149

PROCESS FOR PRODUCING ACRYLIC COMPOSITE FILAMENTS AND SAID COMPOSITE FILAMENTS

Hiroshi Kanno, Amagasaki City, and Kazuo Okamoto, Osaka, both of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1971, Ser. No. 147,963

Claims priority, application Japan, June 3, 1970, 45/48264

Int. Cl. D01d *5/22*

U.S. Cl. 161—172 5 Claims

Acrylic composite filaments having an improved crimpability, a large diameter of crimps, improved yarn properties, such as elongation elasticity, Young's modulus knot strength ratio, and an antipilling property are produced by bonding in a side-by-side relation, a usual acrylonitrile random copolymer with a copolymer obtained by previously polymerizing a monomer consisting essentially of acrylonitrile until the polymerization conversion of said monomer reaches 30 to 70 percent and then adding a particular acrylate comonomer to the resulting polymer and successively subjecting the mixture to the polymerization.

3,769,150

AROMATIC POLYSULPHONE COATED ARTICLE AND BONDED STRUCTURE

Terence King, New Barnet, and John Brewster Rose, Letchworth, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed June 8, 1971, Ser. No. 150,905

Claims priority, application Great Britain, June 19, 1970, 29,907/70; July 15, 1970, 34,317/70; Feb. 5, 1971, 4,033/71

Int. Cl. B32b *9/04*; C09j *7/02*

U.S. Cl. 161—182 6 Claims

A solid surface is coated with, or bonded to another surface by means of, an adhesive composition comprising an aromatic polysulphone which has a reduced viscosity of at least 0.3 and which contains at least 0.2 (desirably 0.5 to 3.5) hydroxyl groups per 100 polymer repeat units.

3,769,151

ADHESIVE COMPOSITION AND METHOD OF PREPARATION

Gaylen M. Knutson, Yorba Linda, and John Biale, Placentia, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Feb. 14, 1972, Ser. No. 226,257

Int. Cl. C08f *37/18*; C09j *3/14*

U.S. Cl. 161—204 20 Claims

A process for the production of an aqueous emulsion of an ethylene-vinyl acetate polymer is disclosed wherein the polymerization is performed in the presence of a preformed seed emulsion, from 1.5 to 6 weight percent of a protective colloid comprising a mixture of fully and partially hydrolyzed polyvinyl acetate and a minor amount, from 0.01 to 1 weight percent, of an unsaturated acid having from three to six carbon atoms. The seed emulsion is comprised of an aqueous emulsion containing from 25 to 63 weight percent of ethylene-vinyl acetate copolymers having an ethylene content between about 5 and 20 weight percent and from 2 to 6 weight percent of a partially hydrolyzed polyvinyl acetate. The polymerization is performed under an ethylene pressure of from 100 to 1000 psig., sufficient to incorporate from 5 to 20 weight percent ethylene in the final copolymer product and carried out until the total free monomer content of the emulsion is maintained below about 1 weight percent. Conventional free radical initiation of the polymerization reaction is used. The resultant emulsion can be used as an adhesive since films formed therefrom exhibit a high degree of adhesiveness.

3,769,152

DIGESTION OF WOOD WITH OXYGEN IN THE PRESENCE OF ALKALI

Hans Olof Samuelson, and Goteborg Sture Erik Olof Noreus, both of Ornskoldsvik, Sweden, assignors to Mo Och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Continuation-in-part of Ser. No. 869,875, Oct. 27, 1969, Pat. No. 3,652,385, and a continuation-in-part of Ser. No. 36,670, May 12, 1970, Pat. No. 3,652,386. This application Feb. 26, 1971, Ser. No. 119,375

Claims priority, application Sweden, May 13, 1970, 6569/70. The portion of the term of this patent subsequent to Mar. 28, 1989, has been disclaimed.

Int. Cl. D21c *9/10*

U.S. Cl. 162—65 36 Claims

A process is provided for the production of cellulose of high brightness from wood by digestion with alkali and oxygen in aqueous solution under moderate oxygen pressure, limiting the amount of alkali at the start of the digestion to less than that required, and progressively adding alkali as the digestion continues, while maintaining the digestion liquor at a pH within the range from about 9.2 to about 13.

3,769,153

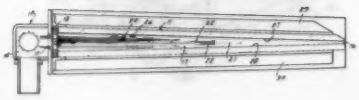
PAPERMAKING MACHINE HEADBOX WITH MULTIPLE STIFF, VIBRATIONAL RODS OR PLATES EXTENDING DOWNSTREAM IN THE SLICE CHAMBER

Lester M. Hill, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Mar. 19, 1971, Ser. No. 126,176

Int. Cl. D21f *1/02*

U.S. Cl. 162—216 11 Claims

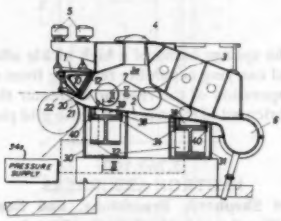


A headbox structure for feeding a slurry of stock onto a traveling forming surface for a paper making machine including a tapering slice chamber with cantilever supported self-supporting, self-exciting vibrational rods or plates cantilever supported at their upper end and extending in a downstream direction within the slice immediately ahead of the slice opening and operational to reduce the network strength between the fibers as they are delivered onto the traveling forming surface.

3,769,154
PRESSURIZED CHAMBERS FOR CONTROLLING DEFLECTION OF PAPERMAKING MACHINE HEADBOX WALLS

Karl Wolf, Heidenheim-Schnaitheim, Germany, assignor to J. M. Voith GmbH, Heidenheim (Brenz), Germany

Filed Dec. 2, 1970, Ser. No. 94,517
Claims priority, application Germany, Dec. 13, 1969, P 19 62 634.7
Int. Cl. D21f 1/02
U.S. Cl. 162—340 8 Claims

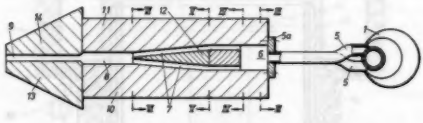


A closed, pressure operated, stock inlet box, especially for a papermaking machine, which has walls supporting the lips of the discharge nozzle. The lip supporting walls of the box are constructed as hollow girders and support for the walls is provided by supporting load relief girders adjacent the walls and confining therewith chambers which are pressurized. The load relief girders, according to the invention, are mounted inside the hollow girders of the walls to be supported thereby leading to a compact structure. Mechanical support elements, ribs, for example, disposed between the load relief girders and the supported walls transmit loads from the walls to the load relief girders in the event of loss of pressure in the pressure chambers.

3,769,155
STOCK INLET SYSTEM FOR A PAPER MAKING MACHINE INCLUDING CONVERGING SETTLING DUCTS

Christain Schiel, Heidenheim-Schnaitheim, Germany, assignor to J. M. Voith GmbH, Heidenheim (Brenz), Germany

Filed Feb. 16, 1971, Ser. No. 115,241
Claims priority, application Germany, Feb. 18, 1970, P 20 07 308.9; July 29, 1970, P 20 37 539.7
Int. Cl. D21f 1/02, 1/06
U.S. Cl. 162—343 6 Claims

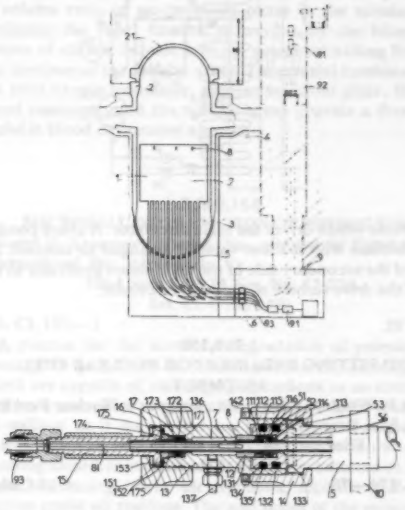


Stock is fed to a discharge chamber and discharge slice from a stock inlet chamber or manifold by first passing through multiple manifold pipes which convey the stock to a chamber where the stock is mixed and fiber clumps are broken up. The stock then is passed through multiple settling ducts which may have circular, rectangular or pentagonal cross-sectional shapes to the discharge chamber, the ducts being substantially parallel when viewed from above, but having portions immediately upstream of the discharge chamber converging with one another in the vertical direction when viewed from the side. Each duct has a constant cross-sectional shape, and the convergence of the multiple ducts into the discharge chamber is such that each duct is separated from each other by a thin cutting edge.

3,769,156
INSTALLATION FOR MEASURING AND CONTROLLING A NUCLEAR REACTOR

Jean Brecy, Montrouge, France, assignor to Framatome, Paris, France

Filed Aug. 30, 1971, Ser. No. 176,197
Int. Cl. G21c 17/06
U.S. Cl. 176—19 7 Claims



An installation for measuring and controlling a nuclear reactor of which the core is situated in a pressurised reactor vessel surrounded by a shielding enclosure, comprises measuring apparatus which is situated in a measuring room outside the shielding enclosure and at a level below that of the opening plane of the vessel, the apparatus being connected to movable detectors each displaceable inside a guide tube capable of penetrating into the core by sliding in a channel, each channel being connected at one end to the vessel bottom and at the other end leading into the measuring room, the other end of each channel including a device which is capable of providing an adjustable seal between the inner surface of the channel and the outer surface of the associated guide tube.

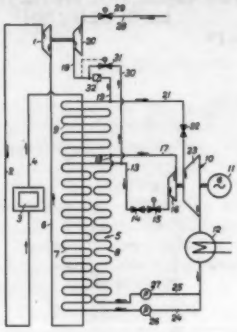
3,769,157
EMERGENCY COOLING OF A GAS-COOLED NUCLEAR REACTOR

Kare Hannerz, Vasteras, Sweden, assignor to A B Asea - Atom, Vasteras, Sweden

Filed Aug. 23, 1971, Ser. No. 173,976
Claims priority, application Sweden, Aug. 25, 1970, 11504/70
Int. Cl. G21c 9/00
U.S. Cl. 176—38 1 Claim

For emergency cooling of a nuclear reactor plant, there is provided a primary flow circuit for cooling gas through the reactor core, and then through the primary sides of a reheater and a main steam generator, to a main circulator pump which returns the gas to the core. Another flow circuit is provided which conducts condensed water from a turbine condenser to the secondary side of a main steam generator, and conducts the steam produced therein through a high pressure part of a main turbine and then to the secondary side of the reheater and to the low pressure part of the main turbine and to the

condenser. Condensed water from the condenser is also pumped into an auxiliary generator parallel with the main steam generator where it is vaporized and the steam produced is conducted to the secondary part of the reheater 9, and then

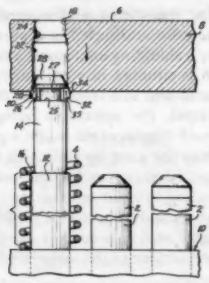


to a turbine which drives the main circulator. A shunt conduit in connection with a shunt valve is arranged to connect the outlet of the secondary side of the main steam generator to the inlet of the drive turbine of the main circulator.

3,769,158
END FITTING RETAINER FOR NUCLEAR FUEL ASSEMBLY

Gordon R. Winders, Olney, Md., assignor to Nuclear Fuel Services, Inc., Rockville, Md.

Filed Nov. 24, 1971, Ser. No. 201,927
Int. Cl. G21c *3/32*
U.S. Cl. 176—78 **10 Claims**



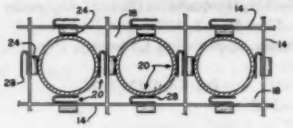
A nuclear reactor core fuel assembly has upstanding support rods supporting an end fitting over the fuel rods. The support rods have reduced necks extending through openings in the end fitting with resilient split rings in grooves and engaging the end fitting. The rings may be flexed by a special tool for removal of the end fitting or may be flexed by the end fitting when lowered thereon.

3,769,159
FUEL ELEMENT GRID SUPPORT FOR NUCLEAR REACTOR

Walter H. Zinn, Glastonbury, and Harold V. Lichtenberger, West Simsbury, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed June 24, 1968, Ser. No. 739,224
Int. Cl. G21c *3/34*
U.S. Cl. 176—78 **8 Claims**

A support grid for the fuel assembly of a nuclear reactor. The grid being generally of the egg crate type of construction with the crossed grid plates being of a material having a low neutron absorption cross-section (Zircaloy). Springs to prevent fuel element movement are secured to these grid



plates with the springs being of a high nickle alloy steel such that their load carrying capability resulting from stress relaxation during operation of the reactor is greater than would be the case if fabricated of the material of the grid plates.

3,769,160
NEUTRON ABSORBERS

Leslie Robert Shepherd, Broadstone, and Samuel Brittan Hosegood, Wareham, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

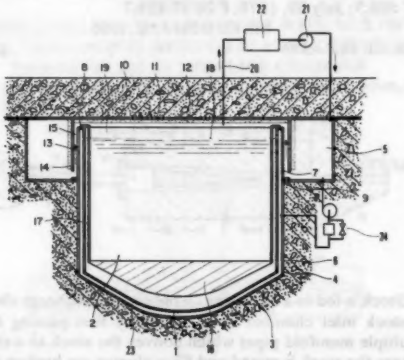
Filed May 13, 1971, Ser. No. 143,191
Claims priority, application Great Britain, May 21, 1970, 24,774/70
Int. Cl. G21f *1/06, 1/08;* G21c *1/00*
U.S. Cl. 176—86 R **9 Claims**

The use of nitrogen as a neutron absorber is applied by employing silicon nitride in a foamed or high density form. Materials having neutron absorption cross-sections higher than silicon nitride may be incorporated with the silicon nitride.

3,769,161
REACTOR VESSEL SUPPORTING DEVICE

Didier Costes, Paris, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed July 8, 1971, Ser. No. 160,743
Claims priority, application France, July 9, 1970, 7025520
Int. Cl. G21c *13/00*
U.S. Cl. 176—87 **6 Claims**

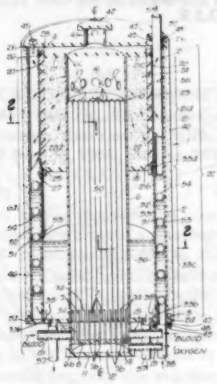


In a nuclear reactor comprising a main vessel filled with a hot heat-transporting liquid and surmounted by a cold shield slab with interposition of a gas blanket, the reactor vessel is supported by a cylindrical shell having a diameter which is slightly larger than the vessel, the top portion of the shell is secured to the vessel in leak-tight manner and the bottom portion of the shell is secured to a peripheral corbel of the vault which contains the vessel and which is closed by the shield slab.

3,769,162
BLOOD OXYGENATOR AND THERMOREGULATOR APPARATUS

Robert C. Brumfield, 73 Emerald Blvd., Laguna Beach, Calif.

Filed Aug. 26, 1971, Ser. No. 175,182
Int. Cl. A61m *1/03*
U.S. Cl. 195—1.8 12 Claims

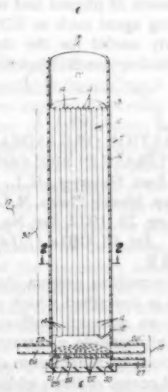


Venous human blood flows into a base distributing manifold of a blood oxygenator, whose operating components are cooperatively vertically coaxially disposed. The blood is distributed into vertically aligned multiple, controlled small diameter oxygen exchange tubes, each exchange tube having a coaxial oxygen injection tube disposed at the exchange tube base. Oxygen gas flows through each injection tube, maintaining two-phase flow of oxygen-blood up through the exchange tubes. After oxygenation and separation of excess oxygen and exchanged carbon dioxide gas in a gas separator, the blood is further defoamed in an external coaxial defoamer bed. The defoamed blood then descends a coaxial annular ring in a spiral flow path over a spiral metal tube heat exchanger which contains temperature controlled circulating heat transfer fluid. The oxygenated defoamed blood is thermoregulated to the necessary temperature, exiting from the oxygenator base blood outlet conduit, returning to the patient's body.

3,769,163
BLOOD OXYGENATOR FLOW GUIDE

Robert C. Brumfield, 73 Emerald Blvd., Laguna Beach, Calif.

Filed Nov. 8, 1971, Ser. No. 196,458
Int. Cl. A61m *1/03*
U.S. Cl. 195—1.8 3 Claims



Venous patient blood flows into an oxygenator blood inlet container which is coaxially disposed above an oxygenating gas inlet container. The oxygenating gas enters the blood inlet container through multiple gas injection apertures in a gas distributing manifold plate disposed between the two containers. The above pair of containers are coaxially secured to the base terminus of a vertically aligned, multiple, small diameter aperture, tubular configuration of an oxygen exchange tubular array, the inlet blood container adjacent the base terminus of the exchange tubular array. The gas manifold plate has multiple apertures typically ranging from 120 to 500 microns in diameter, through which the oxygenating gas bubbles into the venous blood. The two-phase flow of blood and oxygenating gas flows upward through the multiple exchange tubular array, the aperture walls stabilizing the two phases. The large surface to volume ratio of gas to blood phase in the tubular array facilitates the rapid fixation of oxygen by the blood, and release of carbon dioxide into the gas phase exiting from the top terminus of the tubular array. The coaxial combination of the inlet oxygen container, the gas manifold plate, the inlet blood container, and the tubular array provide a flow guide useful in blood oxygenator apparatus.

3,769,164
MICROBIAL DEGRADATION OF PETROLEUM

Edward N. Azarowicz, Vienna, Va., assignor to Bioteknika International, Inc., Alexandria, Va.

Filed June 3, 1970, Ser. No. 43,226
Int. Cl. C12b *1/00*
U.S. Cl. 195—2 25 Claims

A process for the microbial degradation of petroleum by treating the petroleum or oil with particular microorganisms which are capable of utilizing hydrocarbons as an energy and carbon source. The process is used, for example, to clean up oil spillage as it may occur on the open sea, inland fresh waters, beaches, rock-bound shore lines, harbors, etc. and for cleaning closed containers, such as tanker bottoms or storage tanks containing heavy tar fractions, asphalts and heavy, viscous crude oil residues. The end result of the process is to restore oil-polluted marine, benthic and littoral environments to habitable, ecologically-clean environments. The microorganisms employed are edible and completely non-pathogenic to marine fauna and flora as well as to humans and animals.

3,769,165
PROCESS FOR PRODUCING ADENOSINE TRIPHOSPHATE AND ADENOSINE DIPHOSPHATE

Kiyoshi Nakayama, Sagamihara-shi, Japan, assignor to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 682,654, Nov. 13, 1967, abandoned.
This application June 14, 1968, Ser. No. 736,986
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 N 17 Claims

A process for producing adenosine triphosphate (ATP) and adenosine diphosphate (ADP) which comprises culturing a microorganism belonging to the genus Corynebacterium, Micrococcus or Arthrobacter in an aqueous nutrient medium containing adenine, a derivative of adenine, such as adenosine or adenylic acid, or a substance containing the same, accumulating ATP and ADP therein and recovering the products. The yield may be increased by including at least about 0.4 percent by weight of PO_4 as inorganic phosphate in the medium.

3,769,166
ENZYMATIC MONOHYDROLYSIS OF PROSTAGLANDIN DIESTER

Michael R. G. Leeming, Canterbury, England, assignor to American Home Products Corporation, New York, N.Y.

Filed Dec. 28, 1971, Ser. No. 213,187
Int. Cl. C12d *1/02*
U.S. Cl. 195—51 R 5 Claims

The use of citrus acetyl esterase to selectively hydrolyze one of the ester functions present in 15-(R)-acetoxy-9-oxoprosta-

5-cis-10,13-trans-trienoic acid, methyl ester (15-epi-PGA$_2$, acetate, methyl ester) is disclosed. The product of this selective hydrolysis is a useful intermediate for the synthesis of other physiologically active Prostaglandins.

3,769,167

CONCURRENT PRODUCTION OF A PLURALITY OF ENZYMES

London D. Boyer, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed May 24, 1971, Ser. No. 148,256
Int. Cl. C07g *7/028*
U.S. Cl. 195—66 R **12 Claims**

A plurality of enzymes are concurrently produced by a process and system in which the physical facilities employed are integrated at a plurality of locations to permit certain common equipment and reactants to be used during the concurrent production of the several enzymes.

3,769,168

PROCESS FOR THE PURIFICATION OF AMYLASES

Kazuo Masuda, Okayama, Japan, assignor to Hayashibara Company, Okayama, Japan

Filed June 11, 1971, Ser. No. 152,415
Int. Cl. C07g *7/02*
U.S. Cl. 195—66 R **6 Claims**

The present procedure concerns a process for the purification of beta-amylases comprising treating a crude beta-amylase solution derived from wheat bran, soy bean or fresh sweet potato with an adsorbent such as bentonite, acidic clay, kaolinite and activated clay at a pH lower than 5.0 to adsorb the beta-amylases, washing out the adsorbent with water, and then eluting the adsorbed beta-amylases with a solution with an ionic strength over 0.5μ and a pH exceeding 5.0.

3,769,169

FERMENTATION PROCESS

Jerome Birnbaum, Morganville, and Edward Inamine, Rahway, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 20, 1971, Ser. No. 145,573
Int. Cl. C12k *1/00*
U.S. Cl. 195—80 **12 Claims**

A method for improving the yield of 7-(D-5-amino-5-carboxylvaleramido)-3-(carbamoyloxymethyl)-7-methoxy-3-cephem-4-carboxylic acid by adding to fermentation media an additive selected from glycine, L-phenylalanine, a carbamate or an amide, or combinations thereof. The product is a new antibiotic produced from a new strain of Streptomyces; it exhibits activity against gram-negative and gram-positive bacteria.

3,769,170

METHOD OF PRODUCING COENZYME Q10 BY MICROORGANISMS

Keji Kondo; Yuzo Yamada, both of Shizuoka-ken; Koji Mitzugi, and Shin-Ichiro Otsuka, both of Kanagawa-ken, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Mar. 8, 1971, Ser. No. 122,226
Claims priority, application Japan, Mar. 31, 1970, 45/27329; Aug. 24, 1970, 45/74012
Int. Cl. C12c *1/00*
U.S. Cl. 195—82 **3 Claims**

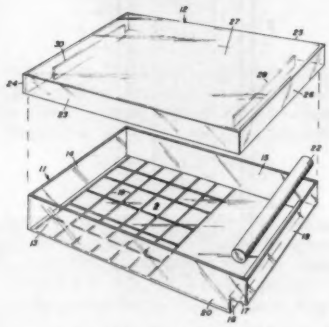
Certain yeasts and bacteria produce a large amount of intracellular coenzyme Q_{10} which is useful as medicine.

3,769,171

MICROBIOLOGICAL STREAKING METHOD

Raymond E. Grimes, Santa Ana, and Robert W. Bruen, Laguna Niguel, both of Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Division of Ser. No. 92,364, Nov. 24, 1970, Pat. No. 3,696,002. This application Apr. 25, 1972, Ser. No. 247,393
Int. Cl. C12k *1/04*
U.S. Cl. 195—103.5 R **1 Claim**



A relatively flat rectangularly shaped container assembly having a cover, preferably of transparent material, which cover has a depending skirt that encompasses upwardly extending walls of the container. The container is constructed to contain a quantity of gelled material as a culture medium for bacteria and other microorganisms. A roller is positioned at one side for gravity movement from that side to the other side when the cover is removed and the container is inclined, whereby colonies of the microorganisms can be rapidly and uniformly isolated for identification and enumeration.

3,769,172

STABILIZED PHENOL NITROPRUSSIDE REAGENT AND ANALYSIS OF NITROGEN

Leo F. Bressler, St. Louis, and Charles F. Steinbrink, Jr., Fenton, both of Mo., assignors to Sigma International Ltd., Saint Louis, Mo.

Filed May 1, 1972, Ser. No. 248,873
Int. Cl. G01n *31/14*
U.S. Cl. 195—103.5 R **7 Claims**

An aqueous solution of phenol and nitroprusside is stabilized with a chelating agent such as EDTA or NTA. The reagent is particularly useful for the determination of urea nitrogen by a modified urease-Berthelot reaction.

3,769,173

DETERMINATION OF GAMMA-GLUTAMYL TRANSPEPTIDASE IN BIOLOGICAL FLUIDS

James J. Carroll, East Hanover, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 21, 1972, Ser. No. 282,632
Int. Cl. G01n *31/14*
U.S. Cl. 195—103.5 R **11 Claims**

A method for determining gamma-glutamyl transpeptidase in biological fluids is described which comprises incubating the test fluid with an aqueous buffered solution of an L-gamma-glutamyl-p-nitroanilide substrate, glycylglycine, sodium nitrite, and optionally, magnesium chloride hexahydrate, for a predetermined period of time; adding, after incubation is completed, a mineral acid reagent solution of 8-hydroxy quinoline sulfate containing a water soluble, nonionic emulsifier, the mineral acid solution having a pH of between 0.8 and 1.3;

adding an alkaline solution which will impart a pH of between 10.5 and 12, in the total reaction solution, said alkaline solution optionally containing ethylenediaminetetraacetic acid, tetrasodium salt; and reading the optical density of the total reaction solution as a measure of gamma-glutamyltranspeptidase concentration in the test sample of biological fluid. The method of the invention is accurate and approximately 4.5 times more sensitive than the standard test method currently being used.

3,769,174

MICROTISSUE RESPIROMETER

Alex D. Beltz, 1451 Dale Dr., Savannah, Ga., and Ezra Paul Reineke, 680 Gunson, East Lansing, Mich.

Filed Dec. 30, 1968, Ser. No. 787,953
Int. Cl. C12b 1/22
U.S. Cl. 195—127 **1 Claim**

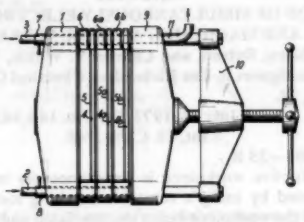
A respirometer having reaction and compensating vessels attached to the respective arms of a manometer. A gas injetion means having a measurement means for measuring the amount of gas injected by the gas injection means is interconnected to the vessels and manometer through a three-way valve which has positions first, interconnecting manometer, reaction vessel, compensating vessel and gas injection means, second, blocking all the interconnections of the first position, and third interconnecting only the reaction vessel, that corresponding arm of the manometer and the gas injection means.

3,769,175

PROCESS AND APPARATUS FOR THE CONTINUOUS TREATMENT OF LIQUIDS WITH ENZYME CARRIERS

Philipp Berdelle-Hilge, Mainz/Rhein, Germany, assignor to Intermag GmbH., Aarau, Switzerland

Division of Ser. No. 758,019, Sept. 6, 1968, abandoned. This application July 15, 1971, Ser. No. 163,168
Int. Cl. C12b 1/00
U.S. Cl. 195—139 **6 Claims**



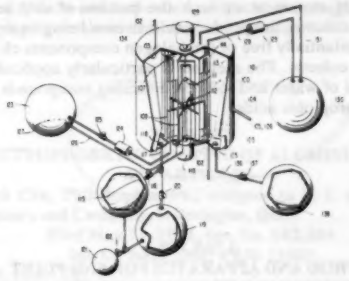
A process and apparatus has been provided for accelerated fermentation of fermentable liquids, such as beer wort. Accordingly, an enzyme carrier dispersion such as yeast is deposited either before or concurrently with the fermented liquid in a layer on a porous body which has pores sized to pass the liquid but not the enzyme carrier. As a result of the capability to support considerable amount of the enzyme carrier on the porous support, fast fermentation rates are achieved. Moreover, the enzyme carrier may be deposited on an inert material and then deposited on the porous support which allows easy metering of the necessary amount of enzyme for facile control of the fermentation reaction. An apparatus has also been provided which comprises at least one chamber having an inlet conduit for introducing an enzyme carrier dispersion and the liquid, the chamber being provided with communicating conduits with a next, adjacent chamber. Further, closing means are provided for the apparatus communicating with each chamber for alternatively closing said inlet conduits, as well as a porous member within the chamber upon which the enzyme carrier is deposited. The porous member has pores of a diameter less than the diameter of particle sizes in said enzyme dispersion. Still further, the apparatus is provided with a conduit for collecting the fermented liquid communicating with the last chamber, the porous body having communicating conduits with each chamber wherein the porous body forms the outlet opening of the preceding chamber and the inlet opening for the adjacent chamber.

3,769,176

APPARATUS AND METHOD FOR MICROBIAL FERMENTATION IN A ZERO GRAVITY ENVIRONMENT

Ralph E. Hise, Littleton, and Russell T. Jordan, Denver, both of Colo., assignors to Martin Marietta Corporation, Friendship Airport, Md.

Filed May 17, 1971, Ser. No. 143,808
Int. Cl. C12b 1/14
U.S. Cl. 195—142 **13 Claims**



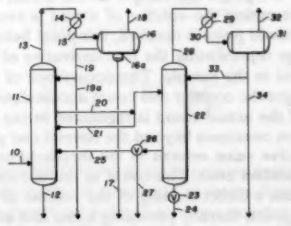
The growth of micro-organisms, including cells, molds, yeasts, bacteria and the like, under conditions of substantially zero gravity, is accomplished in a closed system maintained within a space vehicle in orbital flight including mechanisms for supplying oxygen of an optimum bubble size range and number density of bubbles, to a suitable culture medium, continuously dialyzing the culture medium of the micro-organism suspension against an excess of fresh culture medium to remove metabolites and replenish nutrients, supplying additional growth medium to the culture as needed, and recovering desired products of the fermentation, including, for example, enzymes, steroids and pharmaceuticals.

3,769,177

PURIFICATION OF CARBOXYLIC ACIDS BY PLURAL STAGE DISTILLATION WITH SIDE STREAM DRAW-OFFS

Lloyd S. Eubanks, Texas City; Krouse S. McMahon, El Lago; John T. Payne, Texas City, all of Tex., and Frederick E. Rosenberger, Des Peres, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 10, 1971, Ser. No. 197,434
Int. Cl. C07c 51/44
U.S. Cl. 203—71 **17 Claims**



A process for the removal and recovery of halogen components and the drying of aqueous monocarboxylic acids, par-

ticularly those produced by the reaction of an alcohol or olefin and carbon monoxide in the presence of a catalytic system comprising a Group VIII metal component and a halogen component containing bromine or iodine and at least a portion of the halogen component being either an alkyl halide or a hydrogen halide. The process comprises introducing a monocarboxylic acid stream containing water and the halogen contaminant into a first distillation column, removing an overhead fraction containing primarily alkyl halide, removing a bottoms fraction from said first distillation column containing the hydrogen halides present in said column, taking a stream from the middle portion of said first distillation column and introducing it into the upper half of a second distillation column, removing an overhead fraction consisting primarily of the water charged thereto, taking a stream from the middle portion of the second distillation column and recycling such stream to the lower half of the first distillation column, said stream containing essentially all of the hydrogen halide present in said second distillation column, and removing a product acid stream at or near the bottom of said second distillation column, the product acid stream being essentially dry and substantially free of the halogen components charged to the first column. The method is particularly applicable to the removal of water and iodine-containing compounds from acetic and propionic acids.

3,769,178

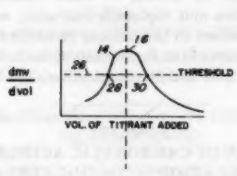
METHOD AND APPARATUS FOR END POINT DETECTION IN POTENTIOMETRIC TITRATION

Charles E. Rothermel, Jr., Waynesboro, Va., assignor to Rothermel Associates, Inc., Waynesboro, Va.

Filed Apr. 27, 1972, Ser. No. 248,092

Int. Cl. G01n *27/46*

U.S. Cl. 204—1 T **44 Claims**



A method of automatically determining the end point of a potentiometric titration and apparatus for carrying out the method are disclosed. A titrant is added to a solution at a measured rate by a motor-driven burette. A counter and a count accumulator are provided to record the amount of titrant added to the sample and means are provided to measure changes in the pH of the sample as the titrant is added. The count representing the volume of titrant is recorded until a preset threshold point is reached, this point being determined by a voltage representing the first derivative of the changing pH potential in the sample. The occurrence of the threshold point changes the counter and count accumulator so that only one-half of the actual count is registered in the accumulator. The titration continues beyond the normal end point until the first derivative value returns to the threshold point, at which time the titration ends. The count in the accumulator at this time provides a direct reading of the volume of titrant added to the end point, thereby providing a fast and accurate determination of the end point. The half count technique is applicable to any titration that can be carried out by standard or developed potentiometric procedures.

3,769,179

COPPER PLATING PROCESS FOR PRINTED CIRCUITS

Arthur H. Durose, Richmond Heights, and Thomas P. Malak, Garfield Heights, both of Ohio, assignors to Kewanee Oil Company, Bryn Mawr, Pa.

Continuation-in-part of Ser. No. 30,977, April 22, 1970, abandoned, which is a continuation-in-part of Ser. No. 794,348, Jan. 27, 1969, abandoned. This application Jan. 19, 1972, Ser. No. 219,116

Int. Cl. C23b *5/20, 5/48*

U.S. Cl. 204—24 **7 Claims**

A perforated printed circuit board is plated with a smooth and ductile deposit of copper from a high acid-low copper sulfate bath under conditions that give a copper deposit having a surface to hole thickness ratio of less than unity. Plating is carried out at a current density of between 15 and 60 asf using a bath maintained at a temperature of between 20° and 30°C., said bath containing 70–150 g/l of $CuSO_4 \cdot 5H_2O$ and 175–300 g/l of H_2SO_4 and preferably including 1 or more grain refining agents. The process is applicible to boards up to ⅛ inch thick and wherein the ratio of board thickness to hole diameter is between about 1/1 and 4/1.

3,769,180

PROCESS FOR ELECTROLYTICALLY COLORING PREVIOUSLY ANODIZED ALUMINUM USING ALTERNATING CURRENT

Ove Christopher Gedde, Gaupefaret 24, 1713 Gralum, Sarpsborg, Norway

Filed Dec. 29, 1971, Ser. No. 213,753

Int. Cl. C23b *9/02*; C23f *17/00*

U.S. Cl. 204—35 N **6 Claims**

Anodized aluminum or aluminum alloy articles may be colored in blue tones by supplying alternating current to the articles in an aqueous acidic solution of silicomolybdic acid or silicotungstic acid.

3,769,181

METHOD OF SIMULTANEOUSLY ELECTROPLATING AND MACHINING A METAL SURFACE

Julio L. Biora, Detroit, and Charles V. Wilkie, Troy, both of Mich., assignors to The Richardson Chemical Company, Des Plaines, Ill.

Filed July 21, 1971, Ser. No. 164,943

Int. Cl. C23b *5/48*

U.S. Cl. 204—35 R **2 Claims**

A conductive workpiece is simultaneously machined and electroplated by using a rotatable maching tool against the surface of the workpiece being electroplated and by delivering the electroplating solution thereto under high current density. The electroplating solution comprises an aqueous solution containing one of bronze, cobalt and chromium.

3,769,182

BATH AND METHOD FOR ELECTRODEPOSITING TIN AND/OR LEAD

Merton M. Beckwith, Rockville, and Grace F. Hsu, Vernon, both of Conn., assignors to Conversion Chemical Corporation, Rockville, Conn.

Filed July 6, 1971, Ser. No. 160,109

Int. Cl. C23b *5/14, 5/16, 5/38*

U.S. Cl. 204—43 S **36 Claims**

A plating bath for electrodepositing tin and/or lead contains stannous ion, lead ion, or a mixture thereof, together with a fluoborate, fluosilicate and/or sulfamate electrolyte and a polyoxyalkylated fatty acid alkylolamide surfactant. The bath operates at pH values of less than about 3.0, and very desirable deposits are produced over wide ranges of current densities and under a variety of plating conditions.

3,769,183
CYANIDE ZINC ELECTROPLATING

Robert Leonard Adelman, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 18, 1971, Ser. No. 154,654
Int. Cl. C23b *5/10*
U.S. Cl. 204—55 Y 12 Claims

Aqueous alkaline cyanide zinc electroplating baths and processes are provided in which polyvinyl alcohol or a vinyl alcohol copolymer degraded with periodic acid or an alkali metal periodate is used as a brightener, particularly to give improved plating characteristics at low applied currents. Enhanced zinc plates are obtained when the degraded polyvinyl alcohol is used with other brightening additives, particularly a pyridinium compound having at least one polar substituent.

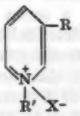
3,769,184
ACID ZINC ELECTROPLATING

John Derek Rushmere, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 23, 1972, Ser. No. 256,179
Int. Cl. C23b *5/12, 5/46*
U.S. Cl. 204—55 R 15 Claims

Acid zinc electroplating baths at pH 3.5 to 7.5 are provided which have dissolved therein as additives

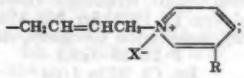
a. a pyridinium compound of the general formula:



wherein

R is $-CONH_2$, $-CN$, $-CHO$ or $-COOR''$;

R′ is an alkyl group of one to four carbon atoms, $-CH_2CH=CH_2$, $-CH_2O\ CH$, $-CH_2CH=CHCH_2X$, $-CH_2COOR$ or



R″ is an alkyl group of one to four carbon atoms; and

X^- is a halide ion; and

b. a water-soluble condensation product of a benzene or naphthalene sulfonic acid, or salt thereof, with formaldehyde, said condensation product containing at least 2 benzene or naphthalene sulfonic acid groups connected with each other by methylene bridges.

3,769,185
ELECTROLYTIC PREPARATION OF ZIRCONIUM AND HAFNIUM DIBORIDES USING A MOLTEN, CRYOLITE-BASE ELECTROLYTE

John M. Gomes, Reno, Nev., and Kenji Uchida, Ibaragi, Japan, assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Dec. 18, 1972, Ser. No. 316,216
Int. Cl. C22d *3/20*
U.S. Cl. 204—71 10 Claims

Zirconium and hafnium diborides are electrolytically synthesized using a molten salt electrolyte containing a major portion of cryolite and minor portions of a sodium alkali, a sodium borate and a source compound to supply the zirconium or hafnium. The synthesis may be accomplished in a cell open to the atmosphere to produce highly pure zirconium and hafnium diborides uncontaminated with their respective oxides.

3,769,186
METHOD OF TREATING WASTE WATER THROUGH ELECTROLYSIS

Minoru Ichiki, and Masahito Ishii, both of Tokyo, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed June 14, 1972, Ser. No. 263,391
Claims priority, application Japan, June 2, 1971, 46/038478
Int. Cl. C02c *5/12*; C02b *1/82*
U.S. Cl. 204—149 5 Claims

A method of treating waste water which is characterized by the purification of the industrial waste water containing at least one member of the group consisting of oil, emulsion, heavy-metal ion and suspended solid matter through electrolysis employing an aluminum alloy as the anode.

3,769,187
ELECTROPHORETIC COATING OF ALUMINUM AND TIN ARTICLES

Edward Chu, Philadelphia, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

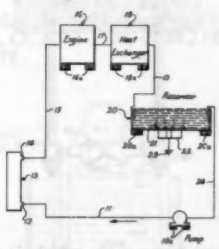
Filed May 11, 1971, Ser. No. 142,384
Int. Cl. B01k *5/02*; C23b *13/00*
U.S. Cl. 204—181 14 Claims

In the process of coating a film-forming polymer on aluminum or tin article by electrophoretic process, the improvement which comprises coating the aluminum or tin article, prior to the electrophoretic process, with a layer of zinc, copper or zinc and copper.

3,769,188
METHOD OF REMOVING OIL FROM ENGINE COOLANT

Roy C. McMahon, Kansas City, Mo., assignor to Electrostatic Equipment Co., Kansas City, Mo.

Filed Jan. 21, 1969, Ser. No. 792,738
Int. Cl. B03c *5/00*; B01d *13/02*
U.S. Cl. 204—186 2 Claims

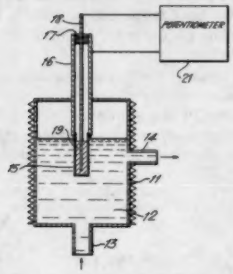


A process of treating cooling water to remove engine oil and to eliminate undesirable oil deposits in an internal combustion engine by subjecting the cooling water to a constant electrostatic field, by substantially insulating from ground all equipment through which the fluid passes, and then by delivering the cooling fluid to a reservoir having grounded electrodes.

3,769,189
APPARATUS FOR CARBON CONTENT ANALYSIS

Geoffrey Long, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed June 9, 1970, Ser. No. 44,702
Claims priority, application Great Britain, June 13, 1969, 30,210/69
Int. Cl. G01n *22/46*
U.S. Cl. 204—195 R 4 Claims

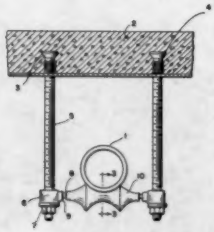


An enclosure of metal, in which carbon is both soluble and mobile, is inserted in the fluid in which carbon content is to be determined. Within the enclosure is an electrolyte and a reference electrode dipping into the electrolyte. The potential between the reference electrode and the metal of the enclosure provides an indication of the carbon content in the fluid.

3,769,190
INSULATING SUPPORTING ROLLER IN CATHODIC PROTECTION SYSTEM

Charles E. Deem, Jr., Line Lexington, Pa., assignor to Utility Products Co., Bala-Cynwyd, Pa.

Continuation of abandoned application Ser. No. 783,660, Dec. 13, 1968. This application June 4, 1971, Ser. No. 150,174
Int. Cl. C23f *13/00*
U.S. Cl. 204—197 1 Claim

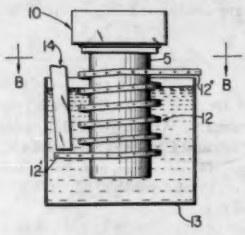


An underground gas main which is protected against electrolytic action by connection to a consumable or "sacrificial" anode of higher electric potential, is insulated from bridges or other grounded structures on which it is supported by supporting rollers of dielectric material which allow longitudinal movement but restrict lateral movement, and prevent passage of leakage current to ground.

3,769,191
VIBRATORY CONVEYOR FOR THE CONTINUOUS ELECTROCHEMICAL TREATMENT OF MASS-PRODUCED PARTS

Erich Stockl, Munich, Germany, assignor to Poligrat Corporation, Zug, Switzerland

Continuation-in-part of abandoned application Ser. No. 807,209, Mar. 14, 1969. This application June 1, 1971, Ser. No. 148,870
Claims priority, application Germany, Mar. 16, 1968, P 15 56 730.3
Int. Cl. B65g *49/04;* C23b *5/68*
U.S. Cl. 204—201 6 Claims

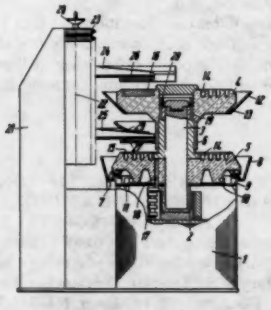


A vibratory conveyor track construction for use in the continuous electrochemical treatment of mass-produced parts which comprises a series of bolts, a plurality of removable wire links electrically conductively connected with said bolts and extending from one of said bolts to an adjacent bolt in each direction, means for connecting said bolts to one pole of a current source and means to impart a carrying motion to said bolts and wire links whereby a continuous vibratory conveyor track is formed and a solid deposited on said vibratory conveyor track will be conveyed in one direction.

3,769,192
METHOD OF ELECTROCHEMICALLY DEBURRING METAL WORKPIECES AND APPARATUS FOR PERFORMING THE SAME

Peter Gosger, Burg an der Wupper, Germany, assignor to AEG-Elotherm GmbH, Remscheid-Hasten, Germany

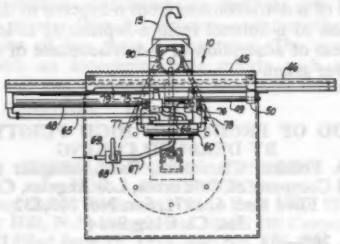
Filed Aug. 11, 1971, Ser. No. 170,777
Claims priority, application Germany, Aug. 11, 1970, P 20 39 789.1
Int. Cl. B23p *1/04*
U.S. Cl. 204—201 14 Claims



A method and apparatus for deburring the edges of workpieces whereby a deburring electrode is disposed adjacent a workpiece on a workpiece carrier so as to define a gap. The electrode includes an electrolyte chamber

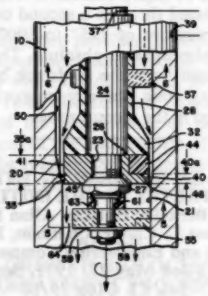
closed on the side adjacent the workpiece by plate having apertures distributed over its surface so that the electrolyte flows out the apertures and over the edges to be deburred.

3,769,193
PLATING BARREL APPARATUS INCLUDING MEANS FOR ROTATING THE BARREL
Thomas R. Gill, Cleveland, Ohio, assignor to GS Equipment Company
Continuation-in-part of application Ser. No. 103,650, Jan. 4, 1971. This application July 1, 1971, Ser. No. 158,977
Int. Cl. C23b *5/78*
U.S. Cl. 204—213 **5 Claims**



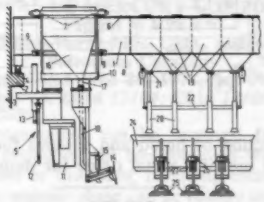
The disclosure pertains to a plating line operation in which a barrel containing the parts to be processed is rotated in liquid baths at a plurality of stations. The barrel is supported on a portable frame which carries structure including a gear for imparting rotary motion to the barrel. Reciprocating racks are provided at each station for engaging the gear when the barrel has been moved into an operative position.

3,769,194
APPARATUS AND METHOD FOR FORMING GROOVES AND LANDS
William Andrew Haggerty, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Original application Aug. 18, 1969, Ser. No. 850,805, now Patent No. 3,630,878, dated Dec. 28, 1971. Divided and this application Mar. 3, 1971, Ser. No. 120,601
Int. Cl. B23p *1/12, 1/20*
U.S. Cl. 204—224 **3 Claims**



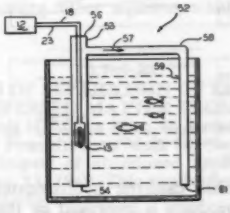
An electrochemical machining apparatus for forming relatively shallow lands and grooves on the relatively smooth interior surface bore of a tubular member, e.g., forming rifling in a gun barrel, includes a tool advanceable into the tubular workpiece while electrolyte is pumped between the tool and the interior surface of the workpiece. The outer peripheral surface of the tool includes a bore sizing and finish machining surface and an associated segmented groove machining and groove finishing surface which is integral therewith. The bore finishing surface machines the interior surface of the bore to a predetermined dimension and is followed in the direction of tool travel by the segmented groove machining surface which forms grooves in the bore to a predetermined diameter greater than the predetermined bore dimension and separated by lands having a diameter equal to the predetermined bore dimension. By rotating the tool during its advancement spiral lands and grooves may be formed. The tool is supported by guides during its travel through the bore of the workpiece, the electrolyte flowing in the same direction that the tool is advancing.

3,769,195
APPARATUS FOR CHANGING ANODE BLOCKS IN AN ALUMINUM FURNACE AND FOR TAPPING AND REFILLING SAID FURNACE
Louis Adriaan Weterings, Utrecht, Netherlands, assignor to N.V. Nederlandse Kraanbouw Mij, Utrecht, Netherlands
Filed July 2, 1971, Ser. No. 159,339
Int. Cl. C22d *3/02, 3/12*
U.S. Cl. 204—244 **9 Claims**



Apparatus for changing anode blocks in an aluminum furnace and for tapping and refilling the furnace provided with an anode changing device being adapted to travel along a mobile horizontal member; gripper means for handling an anode block; means for operating an anode clamp and a reservoir having its outlet directed towards the furnace; a lifting mechanism adapted to convey a tapping device and a reservoir on the horizontal member and having an outlet which is directed towards the filling opening of a silo associated with the furnace.

3,769,196
WATER TREATMENT APPARATUS
Arnold Wikey, 5040 W. Newport Ave., Chicago, Ill. 60641
Filed Mar. 11, 1971, Ser. No. 123,342
Int. Cl. B01k *3/00;* **C02b** *1/82*
U.S. Cl. 204—275 **7 Claims**



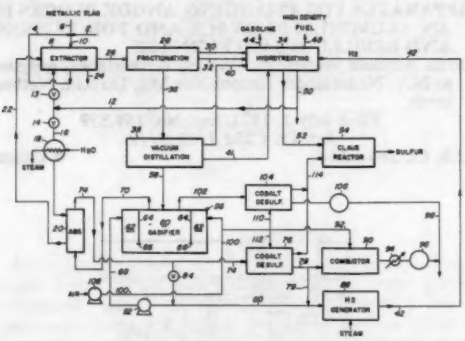
Water treatment apparatus comprising the serial arrangement of spaced apart parallel disposed plates posi-

tioned in the water being treated. Consecutive plates are oppositely polarized at a relatively low voltage. The polarization of the plates is periodically reversed to prevent residual buildups on the plates. The apparatus acts to kill bacteria, to aerate the water being treated and to increase the circulation of the water.

3,769,197
POLLUTION-FREE FUELS

Lawrence E. Leas, Simi, Calif., and Robert L. Leas and Cecil J. Johnson, Columbia City, Ind., assignors to Leas Brothers Development Corporation, Columbia City, Ind.

Filed July 9, 1971, Ser. No. 161,249
Int. Cl. C10g *1/00*
U.S. Cl. 208—8 **9 Claims**

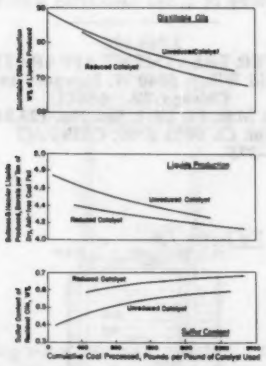


The production of liquid and gaseous fuels from coal including the use of a metal oxide for desulfurization.

3,769,198
HYDROGENATION OF COAL USING UNREDUCED CATALYST

Edwin S. Johanson, Princeton, Michael C. Chervenak, Pennington, and Roland H. Wolk, Lawrence Township, N.J., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed May 24, 1972, Ser. No. 256,563
Int. Cl. C10g *1/06*
U.S. Cl. 208—10 **10 Claims**



The liquid phase catalytic hydrogenation of coal to liquid and gas products is improved by the pretreatment of the catalyst with hydrogen, wherein the pretreatment temperatures are limited to about 200–400° F. and the catalyst is substantially unreduced before start-up oil is introduced into the reactor.

3,769,199
PROCESS FOR SEPARATING WAXY HYDROCARBONS

Aleksander Jerzy Groszek, London, and Douglas Keith Nicholas, Hampton, England, assignors to The British Petroleum Company Limited, London, England

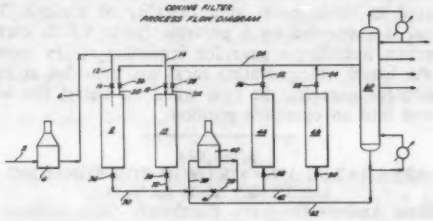
No Drawing. Original application Feb. 17, 1969, Ser. No. 799,885, now abandoned. Divided and this application June 23, 1971, Ser. No. 156,073
Claims priority, application Great Britain, Feb. 20, 1968, 8,174/68, 8,176/68
Int. Cl. C10g *43/04*
U.S. Cl. 208—28 **16 Claims**

Waxy hydrocarbons are adsorbed from petroleum oils boiling above 30° C. using as adsorbent a graphic carbon prepared by the partial oxidation of a hydrocarbon so that not more than 10% of the carbon is released as elemental carbon, the graphitic carbon having a ratio of heat of adsorption of n-dotriacontane from n-heptane to the heat of adsorption of n-butanol from n-heptane of at least 3.5:1 and a heat of adsorption of n-dotriacontane of at least 1 calorie per gram.

3,769,200
METHOD OF PRODUCING HIGH PURITY COKE BY DELAYED COKING

Hillis O. Folkins, Claremont, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 6, 1971, Ser. No. 205,132
Int. Cl. C10g *9/14*
U.S. Cl. 208—53 **13 Claims**



A method for removing inorganic components from a coking feedstock is disclosed. In the method a feedstock containing inorganic impurities is passed through a first coking zone maintained at delayed coking conditions to reduce from 5 to 40 weight percent of the feedstock to coke and vapors. A liquid effluent is withdrawn from the first zone and passed through a second coking zone maintained at a temperature of 775° to 1000° F. and a pressure of 1 to 20 atmospheres absolute. The inorganic components are filtered from the feedstock by coke deposited in the first coking zone, thereby improving the purity of the coke produced in the second zone.

3,769,201
PLURAL STAGE REFORMING WITH A PALLADIUM CATALYST IN THE INITIAL STAGE

John H. Sinfelt, Berkeley Heights, Allan E. Barnett, Westfield, and James L. Carter, Chatham, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed May 27, 1971, Ser. No. 147,655
Int. Cl. C10g *39/00*
U.S. Cl. 208—65 **19 Claims**

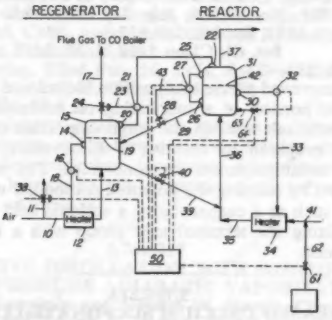
A catalytic reforming process wherein naphtha feed streams, boiling from about 80 to 450° F., and comprising naphthenes, paraffins and aromatics, are contacted, in an initial reaction zone, with a hydrogen containing gas, in the presence of a catalyst comprising Pd, or Pd and a Group I–B metal supported on a refractory oxide, and passed into a tail zone wherein the feed stream is again contacted with a catalyst and thereby further reacted to

produce a high octane number product. In a preferred embodiment the Group I–B metal is Au.

3,769,202
CATALYTIC CONVERSION OF HYDROCARBONS
Charles J. Plank, Woodbury, and Edward J. Rosinski, Deptford, N.J., assignors to Mobil Oil Corporation
No Drawing. Continuation-in-part of abandoned applications Ser. No. 291,585, June 28, 1963, and Ser. No. 455,648, May 13, 1965, which are continuations-in-part of abandoned applications Ser. No. 210,215, July 16, 1962, and Ser. No. 242,594, Dec. 6, 1962. This application May 9, 1966, Ser. No. 548,376
Int. Cl. B01j *11/40;* **C10g** *11/04, 13/04*
U.S. Cl. 208—111 **58 Claims**

This application is directed to a process for the conversion of hydrocarbons employing a catalyst containing a plurality of components. The catalyst contains two different crystalline aluminosilicate zeolites, one having a pore size greater than 8 angstroms and the other having a pore size of less than 7 angstroms. The zeolites are mixed with an inorganic oxide matrix such as silica-alumina and can also contain a transition metal hydrogenating component.

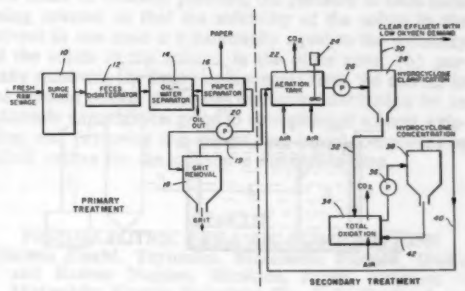
3,769,203
THERMAL ENERGY CONTROL FOR A FCC SYSTEM
Wooyoung Lee, Westmont, and Vern W. Weekman, Cherry Hill, N.J., assignors to Mobil Oil Corporation
Filed June 21, 1971, Ser. No. 155,188
Int. Cl. C10g *13/18*
U.S. Cl. 208—164 **46 Claims**



The specific disclosure provides for separate regenerator and reactor temperature controls for a fluid catalytic cracking process while maintaining a predetermined catalyst circulation rate. The controls provide for independent adjustment of the temperature of the feed stock oil for the reactor, and of the temperature of the oxygen-containing gas for the regenerator to maintain predetermined temperatures in the reactor and in the regenerator, respectively.

3,769,204
DISPERSED GROWTH BIOLOGICAL SEWAGE TREATMENT PROCESS
Don F. Kincannon, L. Andrew Macuila, and William G. Tiederman, Jr., Stillwater, Okla., assignors to Oklahoma State University, Stillwater, Okla.
Filed Apr. 19, 1972, Ser. No. 245,443
Int. Cl. C02c *1/06*
U.S. Cl. 210—6 **5 Claims**

A dispersed growth biological secondary sewage treatment process for removing dissolved organic material and suspended solid material from sewage including metabolizing the dispersed biological solids to yield new cell material, carbon dioxide, and water, subjecting the metabolized medium to hydroclonic forces to separate the



same into clean effluent and concentrated biological solids, and total oxidizing the concentrated biological solids in a saturation environment.

3,769,205
REMOVAL OF MERCURY COMPOUNDS FROM WATER
Ralph P. Williams, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed June 20, 1972, Ser. No. 264,583
Int. Cl. B01d *11/04;* **C01g** *13/00*
U.S. Cl. 210—21 **6 Claims**

Mercury compounds can be removed from aqueous solutions by extracting the solution with water insoluble organic sulfides or disulfides, including mixtures thereof. The insoluble organic phase can be readily separated from the aqueous phase.

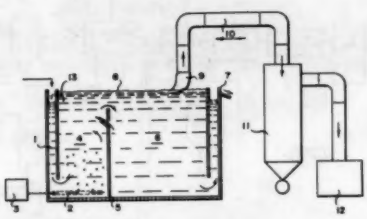
3,769,206
METHOD FOR ELIMINATING COLOR DEVELOPER FOG
Jesse L. Brown and Lynn R. Hotter, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Jan. 5, 1972, Ser. No. 215,635
Int. Cl. B01d *13/00*
U.S. Cl. 210—22 **4 Claims**

It has been discovered that fog induced by color developer solutions which include a sulfite ion antioxidant, a hydroxylamine stabilizer and a salt of an amino polycarboxylic acid as a heavy metal sequestering agent can be eliminated by treating the color developer solution with an ammonia scavenger for example, a biological scavenger such as an enzyme and particularly carbamoyl phosphate synthetase and transamminase enzymes found in activated yeast, or a chemical scavenger such as boric acid or acetaldehyde, protected by a membrane selectively permeable to ammonia and stable at pHs above about 8.0. The technique described herein is equally effective for deammoniating other aqueous alkaline ammoniacal solutions.

3,769,207
PROCESS OF SEPARATION OF EMULSIFIED OR DISPERSED MATTER FROM WATER
Erhardt Hermann Baer, 50 Stroofstrasse, 623 Frankfurt am Main 80, Germany
Continuation-in-part of abandoned application Ser. No. 865,580, Oct. 13, 1969. This application June 14, 1971, Ser. No. 152,659
Int. Cl. B03d *1/00;* **C02c** *1/38*
U.S. Cl. 210—44 **14 Claims**

Separation of emulsified or dispersed substances from water involving the purification of waste water by flota-

tion of impurities and removal of accumulated floating sludge comprises the steps of accumulating floating sludge by the flotation of impurities until the floating sludge



extends above the surface of the water, severing pneumatically that portion of the sludge above the water surface, and removing the sludge using suction jet means. Apparatus is provided therefor.

3,769,208
TREATMENT OF WASTE BRINES

Shirl E. Cook and Samuel R. Henderson, Baton Rouge, La., assignors to Ethyl Corporation

No Drawing. Filed July 22, 1971, Ser. No. 165,324
Int. Cl. C02b *5/02*
U.S. Cl. 210—57 **7 Claims**

Waste brines from bromine or iodine extraction processes are treated with ammonia prior to disposal.

3,769,209
SOLUBLE OIL ADDITIVE CONCENTRATE

Le Roy W. Holm, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Apr. 12, 1971, Ser. No. 133,356
The portion of the term of the patent subsequent to Sept. 12, 1989, has been disclaimed
Int. Cl. B01j *13/00;* **E21b** *43/20*
U.S. Cl. 252—8.55 D **8 Claims**

An additive concentrate for the formulation of soluble oils comprising an admixture of surface active alkyl aryl sulfonates and secondary butyl alcohol in the proportion of about 1 to 12 parts by volume of alkyl aryl sulfonates per part of secondary butyl alcohol. The surface active sulfonate can be a mixture of preferentially oil-soluble and preferentially water-soluble alkyl aryl sulfonates.

3,769,210
CHALCOGENIDES INTERCALATED WITH AMMONIUM AND NON-HEAVY METAL INORGANIC SALTS AND HYDROXIDES

Michael Cais, Palos Altos, Fred R. Gamble, Jr., Los Altos, and Jeanne Helen Osiecki, Los Altos Hills, Calif., assignors to Synvar Associates, Palo Alto, Calif.

No Drawing. Filed Nov. 25, 1970, Ser. No. 92,854
Int. Cl. C10m *7/02, 7/06*
U.S. Cl. 252—25 **7 Claims**

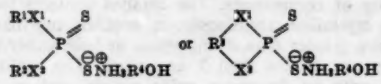
Novel compositions of matter formed of ammonium and non-heavy metal inorganic salt and hydroxide intercalates and heavy metal layered chalcogenides, wherein the chalocogen is selected from sulfur, selenium and/or tellurium. The novel intercalated compounds display advantageous characteristics when utilized as solid lubricants, and as X-ray diffraction grating crystals. Certain of the intercalated transition metal chalcogenides also exhibit unique superconductivity characteristics.

3,769,211
LUBRICATING OIL COMPOSITIONS

Peter Collen Hamblin and James Pennycook Rutherford, Abingdon, England, assignors to Esso Research and Engineering Company

No Drawing. Filed Apr. 26, 1972, Ser. No. 247,811
Claims priority, application Great Britain, May 5, 1971, 13,208/71
Int. Cl. C07f *9/16;* **C10m** *1/48*
U.S. Cl. 252—32 FE **9 Claims**

A lubricating oil composition having an ashless antiwear additive not giving rise to Cu/Pb bearing discolouration comprises a lubricating oil and 0.001 to 20.0% by weight based on the oil, of a mono hydroxy-amine salt of a dithiophosphoric acid, trithiophosphoric acid, or tetrathiophosphoric acid having the formula



where R^1, R^2 and R^4 are hydrogen- and carbon-containing groups, R^3 is a divalent aromatic group, and X^1 and X^2 are oxygen or sulphur atoms. The monohydroxy-amine is preferably monoisopropanolamine, and the groups R^1 and R^2 are preferably C_1 to C_{35} alkyl.

3,769,212
GREASE THICKENED WITH POLYUREA METAL SALTS

Garth M. Stanton, San Anselmo, and John L. Dreher, El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 59,780, July 24, 1970. This application June 2, 1972, Ser. No. 259,053
Int. Cl. C10m *5/22, 5/20, 7/38*
U.S. Cl. 252—33 **11 Claims**

An improved grease composition is disclosed comprising a major portion of a lubricating oil containing a polyurea metal salt wherein the polyurea portion of the molecule is prepared by reacting a diisocyanate, a diamine with a monoisocyanate or monoamine. The metal salt is prepared by reacting the polyurea compound with an acid group, such as a carboxylic or a sulfonic acid group, and neutralizing the terminal acid group with a basic metal compound.

3,769,213
OVERBASED CALCIUM SULFONATE-LUBRICATING OIL COMPOSITIONS

Norman C. Ross, Allison Park, Pa., Hans Schindler, New York, N.Y., and Joseph H. Waples, New Orleans, La., assignors to Witco Chemical Corporation, New York, N.Y.

No Drawing. Filed Dec. 8, 1969, Ser. No. 883,357
Int. Cl. C10m *1/40*
U.S. Cl. 252—33.4 **7 Claims**

An overbasing process to produce calcium compound dispersions in lubricating oil having a base number of at least about 250 which comprises:

(a) admixing calcium sulfonate, water, isobutanol, and lubricating oil;
(b) add carbonated complex of calcium methoxide in isobutanol;
(c) hydrolyze;
(d) heat to remove most water and isobutanol;
(e) cool;
(f) mix overbased product of step (e) with water and isobutanol;
(g) repeat step (b);
(h) repeat step (c);
(i) repeat step (d);
(j) repeat step (e), and
(k) filter.

3,769,214

AQUEOUS LUBRICANT COMPOSITIONS CONTAINING ALKANOLAMINE SALTS OF CARBOXYLIC ACIDS

Robert H. Davis, Pitman, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Sept. 15, 1971, Ser. No. 180,839
Int. Cl. C10m *3/26*
U.S. Cl. 252—34 F 11 Claims

Lubricant compositions are provided containing, as a metal anti-staining agent, a salt of an alkanolamine and a carboxylic acid having at least 12 carbon atoms per molecule, and, as a stability improver, a salt of an alkanolamine and a carboxylic acid having from about 6 to 11 carbon atoms per molecule. These compositions are particularly effective as cutting fluids in metal machining operations.

3,769,215

ESTER LUBRICANT COMPOSITIONS

Robert J. Sturwold and Fred O. Barrett, Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

No Drawing. Filed Feb. 4, 1972, Ser. No. 223,752
Int. Cl. C07c *69/34*; C10m *1/06*
U.S. Cl. 252—49.5 12 Claims

Ester lubricant compositions are provided which provide a good balance of lubricity and emulsifiability. The esters are derived from polyoxyalkylene glycols with a dibasic acid mixture consisting of dimer acids and short-chain dibasic acids. Clear, homogeneous lubricant solutions are also provided.

3,769,216

NITROGENOUS ETHYLENE/PROPYLENE COPOLYMERS AND LUBRICANTS CONTAINING THEM

Chester D. Gordon, El Sobrante, and Donovan R. Wilgus, Richmond, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Feb. 26, 1971, Ser. No. 119,419
Int. Cl. C10m *1/28*, *1/32*
U.S. Cl. 252—51.5 R 14 Claims

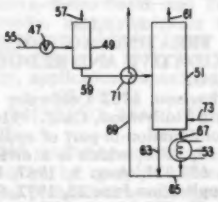
Novel polymers produced by reacting a primary or secondary amine and a mechanically degraded, oxidized atactic ethylene/propylene copolymer. Also disclosed are automotive lubricating oils containing such polymers as antivarnish additives.

3,769,217

EXTRACTIVE DISTILLATION WITH SUBSEQUENT LOWER PRESSURE ADIABATIC VAPORIZATION

Ralph R. Bannister and Gabriel W. Harris, Charleston, W. Va., and Joseph F. Boston, Manchester, Mo., assignors to Union Carbide Corporation

Continuation of abandoned application Ser. No. 804,375, Feb. 27, 1969. This application Apr. 5, 1971, Ser. No. 131,547
Int. Cl. C07c *7/08*
U.S. Cl. 203—53 8 Claims



An improved process utilizing extractive distillation is employed for the separation of organic compounds having different degrees of polarity due for example, to different degrees of unsaturation. The extractive distillation is conducted by substituting, at least in part, pressure differentials for temperature as the driving force for the process. This concept is carried out by the use of at least one of (a) conducting the extractive distillation in at least two zones of different pressure, the pressure in each zone being selected so that the solubility of the solute in the solvent in one zone is substantially equal to the solubility of the solute in the solvent in the other zone, (b) partially removing the heavy components from the solvent in the bottom stream from the extractive distillation by an adiabatic vaporization prior to conventional solvent stripping, and (c) using the solvent-free heavy component as reboil vapors for the extractive distillation step.

3,769,218

PIEZOELECTRIC CERAMIC COMPOSITIONS

Hiromu Ouchi, Toyonaka, Masamitsu Nishida, Osaka, and Katsuo Nagano, Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

No Drawing. Filed Apr. 22, 1971, Ser. No. 136,578
Claims priority, application Japan, Apr. 27, 1970, 45/36,575
Int. Cl. C04b *35/46*, *35/48*
U.S. Cl. 252—62.9 6 Claims

Piezoelectric ceramic compositions having high mechanical strength, high electrical breakdown strength, high electromechanical coupling coefficient and dielectric constant and high stability in resonant frequency over a wide temperature range, and comprising the solid solution in the system

	Percent Mol
PbO	54.8–50.1
Li_2O	4.0–0.1
Nb_2O_5	7.3–0.2
TiO_2	24.8–16.4
ZrO_2	26.9–16.4

and the Nb_2O_5/Li_2O mol ratio has a value selected from within the range $5.00 \geqq Nb_2O_5/Li_2O \geqq 3.16$ or

$$2.84 \geqq Nb_2O_5/Li_2O \geqq 2.00.$$

3,769,219

MANGANESE-ZINC FERRITE MATERIALS

Izuru Sugano, Yoshihiro Kenmoku, Tsuneo Akashi, Tetsujin Matsubara, and Taneaki Okuda, Tokyo, Japan, assignors to Nippon Electric Company Limited, Shiba Gochome, Tokyo, Japan

Continuation-in-part of application Ser. No. 34,968, May 6, 1970. This application Apr. 13, 1972, Ser. No. 243,596
Claims priority, application Japan, May 9, 1969, 44/36,367
The portion of the term of the patent subsequent to Mar. 28, 1989, has been disclaimed
Int. Cl. C04b *35/38*
U.S. Cl. 252—62.59 4 Claims

A manganese-zinc ferrite is provided having as a basic composition 30 to 38% MnO, 51 to 57% Fe_2O_3 and the balance essentially ZnO, the composition further containing by weight 0.01 to 0.5% Co_2O_3, 0 to 3.2% SnO_2, 0 (preferably 0.005) to 1.25% Li_2O, 0.02 to 0.5% CaO and 0.005 to 0.05% SiO_2.

3,769,220

ANTIFREEZE COMPOSITION

John Gordon Willard and Robert Dale Matson, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,306
Int. Cl. C09k *3/00*
U.S. Cl. 252—75 5 Claims

The invention is a combination of inhibitors which effectively prevents corrosion in automotive cooling sys-

tems containing antifreeze solution based on water-soluble alcohols. The combination includes disodium phosphate, dipotassium phosphate, sodium metaborate, potassium metaborate, sodium tetraborate, and sodium mercaptobenzothiazole.

3,769,221
FUNCTIONAL FLUID COMPOSITIONS
Merwyn L. Burrous, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Jan. 17, 1972, Ser. No. 218,544
Int. Cl. C09k *3/00*
U.S. Cl. 252—78 **5 Claims**

Nonflammable functional fluid compositions, which are compatible with a variety of elastomers, in that they do not produce excessive swelling or shrinkage, are formed from mixtures in all proportions of oxaalkyl phosphate esters, including mixed oxaalkyl-alkyl phosphate esters, and mixed oxaalkyl-p-alkoxyphenyl phosphate esters, with alkyl, aryl, or mixed alkyl-aryl phosphate esters.

3,769,222
FREE FLOWING NONIONIC SURFACTANTS
Joseph A. Yurko, Bayonne, Pallassana Ramachandran, Robinsville, Bao-ding Cheng, Highland Park, and Robert E. Dickson, Piscataway, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Filed Feb. 9, 1971, Ser. No. 114,073
Int. Cl. C11d *3/12, 1/72*
U.S. Cl. 252—89 **3 Claims**

A method for converting liquid nonionic surfactants to dry free flowing form is disclosed. The new method includes the mixing of the liquid nonionic material with specific particulate carrier materials in amounts varying from 30 to 85 weight percent. Suitable carrier materials include compounds having functional properties in detergent formulations. The free flowing nonionc surfactant-carrier pre-mix is very suitable for post addition to spray dried detergent formulations in order to increase their content of nonionic surfactant.

3,769,223
DETERGENT FORMULATIONS
Tillmon H. Pearson and Gunner E. Nelson, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.
No Drawing. Continuation-in-part of abandoned application Ser. No. 106,925, Jan. 15, 1971. This application July 28, 1972, Ser. No. 276,178
Int. Cl. C11d *3/20*
U.S. Cl. 252—89 **20 Claims**

To obviate eutrophication of water, non-phosphorus detergent builders and sequestering agents are provided. These are either (a) a 1-oxacyclopropane-2,3-dicarboxylic acid, (b) a water soluble salt of a 1-oxacyclopropane-2,3-dicarboxylic acid or a mixture of (a) and (b). Conventional detergent actives may be used with these builders.

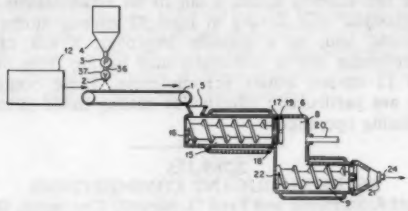
3,769,224
EFFERVESCENT GRANULES
Jack Thomas Inamorato, Westfield, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Continuation of abandoned application Ser. No. 733,280, May 31, 1968. This application Feb. 8, 1971, Ser. No. 113,674
Int. Cl. C11d *7/56*
U.S. Cl. 252—99 **5 Claims**

Granular detergent composition comprising:

(1) Primary granules of one composition (e.g. spray-dried built detergent) and

(2) Effervescent granules, of a different composition, containing a binder, an acid, a carbonate reactive with the acid, and an "effect material."

3,769,225
PROCESS FOR PRODUCING MARBLEIZED SOAP
Raymond George Matthael, Fairlawn, N.J., assignor to Lever Brothers Company, New York, N.Y.
Filed Feb. 12, 1971, Ser. No. 114,785
Int. Cl. B29f *3/12*
U.S. Cl. 252—134 **4 Claims**



A marbleized mass of soap in the form of a log is produced by introducing a soap additive, e.g., a dye, onto a moving bed of milled soap chips entering the upper barrel of a soap plodder and extruding the admixture of soap chips and soap additive.

3,769,226
ORGANOSTANNOIC ACID AND CARBOXYLIC ACID ANHYDRIDE REACTION PRODUCT EPOXY CURING AGENT
Mark Markovitz and Leo S. Kohn, Schenectady, N.Y., assignors to General Electric Company
No Drawing. Continuation-in-part of abandoned application Ser. No. 757,156, Sept. 3, 1968. This application July 27, 1971, Ser. No. 166,613
Int. Cl. C08g *30/12, 51/62*
U.S. Cl. 252—182 **3 Claims**

Epoxy resins cured with organostannoic acid-carboxylic acid anhydride reaction products provide rapid low-temperature curing of epoxy resins which are characterized by good electrical and physical properties including corona resistance.

3,769,227
CHEMILUMINESCENT FORMULATION OF INCREASED LIGHT OUTPUT
Wayne R. Carpenter and Everett M. Bens, China Lake, Calif., assignors to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed May 27, 1968, Ser. No. 733,194
Int. Cl. C09k *1/00*
U.S. Cl. 252—188.3 **3 Claims**

New oxyluminescent formulations containing tetrakis-(dimethylamino)ethylene and a compound such as lithium trifluoroacetate or potassium heptafluorobutyrate which will absorb tetramethylurea and thereby provide overall increased light output over other known chemiluminescent formulations.

3,769,228
METHOD OF TREATING AQUEOUS LIQUIDS TO REDUCE OXIDATIVE AND REDUCTIVE POTENTIAL THEREOF
Joseph B. Michaelson, 6732 Coldwater Canyon Blvd., North Hollywood, Calif. 91606
No Drawing. Continuation-in-part of application Ser. No. 14,836, Apr. 17, 1970, which is a division of application Ser. No. 659,321, Aug. 9, 1967, both now abandoned. This application June 28, 1972, Ser. No. 267,247
Int. Cl. C02c *1/40;* C07c *91/26*
U.S. Cl. 252—188.3 R **9 Claims**

Nitroso aryloxy quaternary ammonium compounds, containing a nitroso substituent, oxidazable to NO_2 or reducible to NH_2 in appropriate liquid media is used to control reductive or oxidative potential of the medium.

3,769,229

DAYLIGHT FLUORESCENT PIGMENTS AND PROCESS FOR PREPARING THEM

Siegfried Noetzel, Mainz, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Nov. 9, 1971, Ser. No. 197,154
Claims priority, application Germany, Nov. 11, 1970, P 20 55 448.7; Feb. 2, 1971, P 21 04 716.5
Int. Cl. C09k *1/02*
U.S. Cl. 252—301.2 R 5 Claims

New daylight fluorescent pigments which contain an organic fluorescent dyestuff and as base resin a condensation resin consisting of a polyester condensate of a dicarboxylic acid and of a bi- and/or polyfunctional alcohol or of a bifunctional alcohol and a di- and/or polyfunctional carboxylic acid, which condensate is cross-linked with an unplasticized, alcohol-modified urea or aminotriazine formaldehyde resin, and a process for their preparation, which comprises incorporating the organic fluorescent dyestuff into the condensation resin.

These daylight fluorescent pigments may be employed for preparing fluorescent paints, for example air-drying lacquers on the basis of alkyl resin or physically drying lacquers on the basis of acrylic resins, as well as for preparing fluorescent printing inks such as inks for screen printing, intaglio printing, book printing and offset-litho printing. Due to their high resistance to heat, they are particularly suitable for fluorescent dyeing of plastics and enamels.

3,769,230

CALCIUM FLUORIDE-RARE EARTH FLUORIDE FLUORESCENT COMPOUND USEFUL AS A LASER CRYSTAL

Morton Robinson, Malibu, and Donald P. Devor, Santa Monica, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation-in-part of abandoned application Ser. No. 847,082, Aug. 4, 1969. This application Apr. 28, 1972, Ser. No. 248,511
Int. Cl. C09k *1/06*
U.S. Cl. 252—301.4 H 3 Claims

A fluorescent compound includes ions of calcium, erbium, and fluorine. The erbium and calcium ions are present in this compound in the exact ratio of 5:2. This new compound has the chemical formula $Ca_2Sr_5F_{19}$. It serves as a laser material when activated with holmium ions substituting for erbium ions and additionally sensitized with thulium ions for erbium ions. The compound may also be further sensitized with ytterbium ions substituting for erbium ions, if desired. Holmium, thulium, and ytterbium concentrations range respectively from 1–10 percent, 1–10 percent, and 0–10 percent of the erbium ions in the $Ca_2Er_5F_{19}$ compound. Experimental evidence indicates that sensitization of fluorescence occurs through an interaction among two or more of the rare earth ions.

3,769,231

PROCESS FOR PREPARING MICROCAPSULES CONTAINING HYDROPHOBIC OIL DROPS

Hiroharu Matsukawa, Keiso Saeki, and Takeo Shimada, Fujimiya, Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

No Drawing. Filed Aug. 4, 1971, Ser. No. 169,097
Claims priority, application Japan, Aug. 6, 1970, 45/68,861
Int. Cl. B01j *13/02*; B44d *1/02, 1/44*
U.S. Cl. 252—316 5 Claims

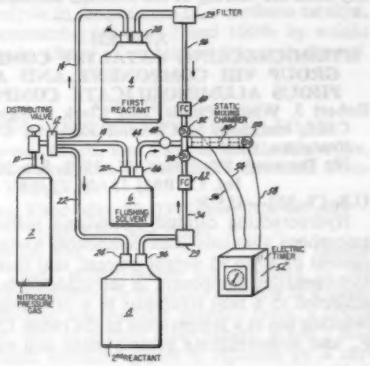
In a process for producing microcapsules containing hydrophobic oil drops by complex coacervation including a conventional prehardening treatment in which an aldehyde and an alkali material are added to the system, the improvement which comprises adding gelatin having an isoelectric point lower than that of the gelatin employed for forming the walls of the coacervates to the system at a temperature lower than the gelling point of the gelatin employed for forming the walls of the coacervates, but prior to the simultaneous presence in the system of said aldehyde and alkali material, in an amount sufficient to prevent an increase in viscosity due to the reaction of gelatin and aldehyde during said prehardening step.

3,769,232

POLYURETHANE FOAM GENERATING APPARATUS

Thomas A. Houldridge, Berea, Ohio, assignor to Olin Corporation

Filed Apr. 26, 1971, Ser. No. 137,506
Int. Cl. B01d; B01f *15/00*; B28b *17/00*; B29c; C08c *17/08*
U.S. Cl. 252—359 E 7 Claims



An improvement is disclosed in an apparatus for the on-site generation of polyurethane foam, which apparatus comprises storage tanks for supplying the foam-forming reactants, a static mixing chamber, and means for conveying the reactants through the mixing chamber. The improvement resides in providing means for simultaneously regulating the flow of reactants into and out of the mixing chamber.

3,769,233

PROCESS FOR THE PREPARATION OF A ZIEGLER-NATTA TYPE CATALYST

Jean Pierre Hermans, Strombeek-Bever, and Paul Henrioulle, Marilles, Belgium, assignors to Solvay & Cie, Brussels, Belgium

No Drawing. Filed Mar. 24, 1971, Ser. No. 127,829
Claims priority, application France, Mar. 26, 1970, 7011085; June 29, 1970, 7024087; July 30, 1970, 7028300; Aug. 3, 1970, 7028663
Int. Cl. B01j *11/84*; C08f *3/10*
U.S. Cl. 252—429 A 16 Claims

A catalyst, useful for the polymerization of olefins, which contains violet $TiCl_3$ and has a high stereospecificity is prepared by contacting brown $TiCl_3$ with $TiCl_4$ at a temperature below 100° C.

3,769,234

PROCESS FOR PRODUCING ACTIVATED TITANIUM TRICHLORIDE-ALUMINUM TRICHLORIDE

Arthur P. Haag, Moraga, and Meyer Weiner, Orinda, Calif., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Feb. 9, 1970, Ser. No. 9,615
Int. Cl. B01j *11/78*
U.S. Cl. 252—442 8 Claims

An improved process for producing co-crystals of titanium trichloride and aluminum trichloride with a desired composition, preferably substantially three moles of titanium trichloride and one mole of aluminum trichloride and substantially free of impurities is described. Such crystals are of value as an active catalyst, particularly,

for example, for preparing polypropylene. The co-crystals are prepared by reacting titanium tetrachloride with aluminum in an excess of titanium tetrachloride. After reaction, excess titanium tetrachloride is vaporized by heating the co-crystals. The improved process provided herein involves dry ball milling of aluminum trichloride with aluminum powder prior to reacting with titanium tetrachloride so that a selected excess of aluminum trichloride over the desired composition is present in the product to compensate for aluminum trichloride volatilized in the drying operation. This serves the multiple functions of yielding co-crystals of controlled composition, activating the aluminum powder for complete reaction, promoting initiation of reaction between aluminum and titanium tetrachloride and enhancing rate of reaction to obviate any need for stirring of the reaction mixture.

3,769,235

HYDROCRACKING CATALYST COMPRISING A GROUP VIII COMPONENT AND AN AMORPHOUS ALUMINOSILICATE COMPONENT

Robert J. White, Pinole, and Clark J. Egan, Piedmont, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Mar. 31, 1971, Ser. No. 129,986

Int. Cl. B01j *11/40, 11/08*

U.S. Cl. 252—455 R **6 Claims**

Hydrocracking catalyst comprising palladium and an amorphous aluminosilicate component having an alumina content of 40 to 95 weight percent, said catalyst, with the hydrogenating component in the oxide form, having been subjected to a heat treatment in a substantially dry nonreducing gas at a temperature in the range 1200° to 1800° F., and hydrocracking process using said catalyst.

3,769,236

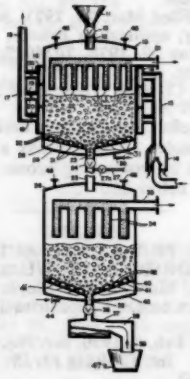
STABILIZED REDUCED COPPER-ZINC OXIDE CATALYST AND METHOD FOR THE PRODUCTION THEREOF

Duane W. Allen, Fern Creek, Ky., and James M. Moe, Manhattan Beach, Calif., assignors to Chemetron Corporation, Chicago, Ill.

Continuation-in-part of abandoned application Ser. No. 811,790, Apr. 1, 1969. This application Mar. 26, 1971, Ser. No. 128,482

Int. Cl. B01j *11/22*

U.S. Cl. 252—463 **9 Claims**



Method of stabilizing copper-zinc oxide catalyst particles which comprises treating them in an inert gas stream with low concentrations of oxygen at 100–250° F. to oxidize 1–7% of the copper to copper oxide in the outer 10% of the particles.

3,769,237

OXIDANT-CATALYST MIXTURE OF BISMUTH OXIDE AND CHROMIA-ALUMINA

John A. Ondrey, Tyler, Tex., and Harold E. Swift, Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Division and a continuation-in-part of application Ser. No. 818,068, Apr. 21, 1969, now Patent No. 3,644,551. This application May 13, 1971, Ser. No. 143,260

Int. Cl. B01j *11/06*

U.S. Cl. 252—464 **13 Claims**

A solid, particulate catalyst-oxidant mixture comprising a 1:1 to 20:1 mixture of particles of bismuth oxide intermixed with separate particles of chromia-alumina. This mixture can be used to convert isobutylene to paraxylene.

3,769,238

AROMATIZATION CATALYST

Samuel J. Tauster, 10 Galahad Drive, Englishtown, N.J. 07726, and John H. Sinfelt, 296 Chaucer Drive, Berkeley Heights, N.J. 07922

No Drawing. Continuation-in-part of abandoned application Ser. No. 724,589, Apr. 26, 1968. This application Oct. 9, 1970, Ser. No. 79,665

Int. Cl. B01j *11/06, 11/22*

U.S. Cl. 252—465 **8 Claims**

Paraffinic hydrocarbons having at least 6 carbon atoms are aromatized at low pressures, preferably atmospheric pressure, in the presence of a novel catalyst comprising a bivalent metal, tetravalent molybdenum and oxygen in chemically combined form supported on deacidified alumina. The supported form comprises a compound having the formula $M_2Mo_3O_8$ where M is a bivalent metal having an ionic radius not greater than 0.95 A.

3,769,239

DEHYDROGENATING CATALYSTS OF RHENIUM METAL AND TUNGSTEN METAL OR MOLYBDENUM METAL ON ALUMINA SUPPORT

Bernard Juguin and Jean François Le Page, Rueil-Malmaison, and Jean Miquel, Paris, France, assignors to Institut Francois du Petrole, Rueil-Malmaison, France

No Drawing. Filed Apr. 19, 1971, Ser. No. 135,489

Claims priority, application France, Apr. 30, 1970, 7016132

Int. Cl. B01j *11/06*

U.S. Cl. 252—465 **8 Claims**

New catalyst for dehydrogenation of saturated hydrocarbons, particularly of those containing from 3 to 40 carbon atoms per molecule, said catalyst containing rhenium and tungsten or molybdenum in proportion of 0.05 to 2% by weight and an alumina carrier.

3,769,240

CATALYST STRUCTURE

Sandy Y. Lew, Natick, and Edward F. Conley, Holliston, Mass., assignors to Brunswick Corporation

No Drawing. Filed Apr. 12, 1971, Ser. No. 133,391

Int. Cl. B01j *11/06*

U.S. Cl. 252—468 **4 Claims**

An improved catalyst structure for use in catalytic processes, consisting of a powdered catalyst, carrier, and metal fiber thoroughly mixed to assure a permanent uniform distribution of the metal fiber, the catalyst-metal fiber mixture then pressed into any desired shape for its intended use. The permanent uniform dispersion of metal fibers results in a catalyst structure having increased thermal conductivity and more uniform porosity, the improved heat transfer characteristics increasing selectivity and min-

imizing temperature gradients in the catalytic structure thereby assuring constant reactor temperature and imparting stability, improved yield and temperature control in highly exothermic and endothermic catalytic reactions.

3,769,241

OXIDATION CATALYSTS

David Gordon Stewart, Epsom, and William John Ball, Capel, England, and Rowland Harris Jenkins, Dollar, Scotland, assignors to BP Chemicals Limited, London, England

No Drawing. Filed Mar. 17, 1971, Ser. No. 125,356
Claims priority, application Great Britain, Mar. 20, 1970, 13,584/70
Int. Cl. B01j *11/06, 11/22*
U.S. Cl. 252—469 7 Claims

Granular or pelleted catalysts suitable for use in the vapour phase oxidation of organic compounds containing antimony and tin as oxide compositions which have been pretreated in powder form by heating in an inert atmosphere to 200 to 500° C. and thereafter pelleted and reheated in molecular oxygen to 550 to 1000° C.

3,769,242

MILDNESS ADDITIVE

Ralph Kelly, 6705 Sampson Lane, Cincinnati, Ohio 45236, and Edmond Jean Ritter, R.R. 1, Box 13A, Loveland, Ohio 45140

No Drawing. Application Jan. 9, 1968, Ser. No. 696,509, now Patent No. 3,630,934, which is a continuation-in-part of application Ser. No. 613,095, Feb. 1, 1967, now Patent No. 3,538,009. Divided and this application May 5, 1971, Ser. No. 140,604
Int. Cl. C11d *3/04, 3/30, 3/32*
U.S. Cl. 252—542 23 Claims

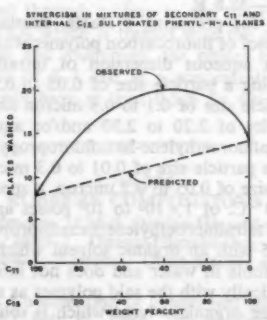
The degree of skin irritation of detergent compositions is reduced by adding small amounts of compounds having at least two polar groups, e.g. hydroxyl, carboxyl, ester, amino, and amido groups separated by an organic radical of at least 15 carbon atoms which contains a cyclic group. In particular, various aliphatic, aromatic and heterocyclic amino, amido and ester derivatives of polymerized fatty acids are disclosed.

3,769,243

LINEAR ALKYLBENZENE SULFONATE DETERGENT COMPOSITIONS

Alan E. Straus, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Original application June 11, 1969, Ser. No. 832,293, now Patent No. 3,647,899. Divided and this application May 27, 1971, Ser. No. 147,702
Int. Cl. C11d *1/22, 3/065*
U.S. Cl. 252—558 3 Claims



Sulfonated derivatives of novel detergent alkylate compositions exhibiting superior synergistic detergent characteristics comprise mixtures of secondary C_{11} and C_{18} sulfonated phenyl-n-alkanes in a weight ratio of from 1:10 to about 4:1, respectively.

3,769,244

POLYURETHANE FOAM REACTION CATALYZED BY SALTS OF 1,8 - DIAZA-BICYCLO(5,4,0)UNDECENE-7

Sei Hashimoto, Kyoto, Keizo Nakatani, Kyoto Prefecture, Shoji Suzuki and Hiroshi Daigo, Kyoto, and Ichizo Fujino, Shiga Prefecture, Japan, assignors to San-Abbott Limited, Kyoto, Japan

No Drawing. Filed Oct. 9, 1967, Ser. No. 673,999
Int. Cl. C08g *22/36, 22/46*
U.S. Cl. 260—2.5 AC 7 Claims

A process for making polyurethanes from isocyanates and organic polyols in the presence of a urethane catalyst, said catalyst containing between 2 and 100% by weight of a diaza-bicyclo-alkene or an acid addition salt thereof.

3,769,245

THERMOPLASTIC POLYURETHANE FOAM

Floyd D. Stewart, Akron, and Charles S. Schollenberger, Hudson, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed May 30, 1972, Ser. No. 257,697
Int. Cl. C08g *22/44*
U.S. Cl. 260—2.5 AM 5 Claims

Essentially linear polyurethanes are prepared by the reaction of stoichiometrically balanced amounts of a linear hydroxyl terminated intermediate polymer resin, a glycol chain extender, and an organic diisocyanate. When a portion of the chain extender glycol is replaced by a carboxyl terminated material and proper catalyst is added, thermoplastic polyurethane foam structures are produced in the absence of water.

3,769,246

METHODS FOR MODIFYING ASPHALTS AND EMULSIONS USEFUL THEREFOR

Fritz S. Rostler, Berkeley, Calif., assignor to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Continuation-in-part of application Ser. No. 108,596, Jan. 21, 1971, which is a division of application Ser. No. 714,424, Mar. 20, 1968, now Patent No. 3,577,250. This application May 10, 1971, Ser. No. 142,067
Int. Cl. C08c *7/18, 9/04;* C08d *7/00, 11/22;* C08f *19/06*
U.S. Cl. 260—5 6 Claims

This invention relates to the improvement of the rheological properties of asphalts in addition to the durability of asphalts by modification of the asphaltenes fraction and/or the maltenes fraction of an asphalt by adding thereto elastomers. This may be accomplished by adding either an n-pentane-soluble polymer or an n-pentane-insoluble polymer or a mixture of the two.

3,769,247

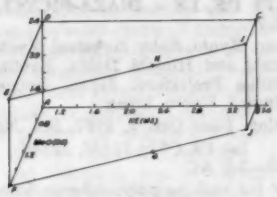
CELLULOSE ETHER THICKENER FOR LATEX PAINT

Ronald L. Glomski, Lewis E. Davis, and Joseph A. Grover, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 138,435, Apr. 29, 1971. This application Apr. 10, 1972, Ser. No. 242,478
Int. Cl. C08b *21/32;* C09d *5/02, 5/14*
U.S. Cl. 260—17 R 10 Claims

New water-soluble hydroxyethyl methyl cellulose ethers have been prepared which are improved thickeners for latex paint. These new ethers have a thermal gel point greater than 100° C., a hydroxyethyl MS of about 1.0–3.5,

a methoxyl DS of about 0.6–1.6 and a total DS of about 1.4–2.4. Latex paint thickened with these new ethers has



HEMC SUBSTITUTION			
Point	HE (M.S.)	MeO(DS)	Total DS
A	1.0	0.6	1.6
B	3.5	0.6	1.6
C	3.5	0.6	2.4
D	1.0	0.6	2.4
E	1.0	1.6	2.6
F	1.0	1.6	1.6
G	2.5	1.2	1.6
H	2.5	1.2	2.4
I	3.5	0.9	2.4
J	3.5	0.9	1.6

improved enzyme resistance and compatibility with predispersed colorants.

3,769,248

STARCH DERIVATIVE PROTECTIVE COLLOIDS IN EMULSION POLYMER SYSTEMS

Leslie P. Kovats, Granite City, Ill., assignor to Anheuser-Busch, Incorporated, St. Louis, Mo.

No Drawing. Filed Oct. 6, 1971, Ser. No. 187,146
Int. Cl. C08d *9/06*
U.S. Cl. 260—17.4 ST **8 Claims**

This application concerns aqueous vinyl acetate polymer and copolymer emulsions stabilized with starch based colloid forming substances, specifically hydroxyethyl starch, hydroxypropyl starch, carboxymethyl starch, methyl-alpha-D-glucoside, and combinations of these.

3,769,249

THERMOSETTING PLASTICS AND METHOD THEREFOR

Norman Bilow, Los Angeles, Calif., assignor to The O'Brien Corporation, South Bend, Ind.

No Drawing. Continuation of application Ser. No. 105,718, Jan. 11, 1971, which is a continuation-in-part of application Ser. No. 665,285, Sept. 5, 1967, both now abandoned. This application Mar. 1, 1973, Ser. No. 337,625
Int. Cl. C08d *9/16*; C08g *51/52*; C10c *1/10*
U.S. Cl. 260—28 **8 Claims**

The disclosure herein relates to conversion of thermoplastic materials and particularly heat softenable aromatic and heterocyclic ring materials of essentially over three aromatic rings to provide improved heat resistant, inert coating and molding compositions, and the products thereof. As exemplified herein, thermally unstable aromatic and cyclic ring pitch-plastics are converted from a thermoplastic state to a thermosetting state by admixture therewith of an aromatic polymethylol curing agent therefor, as herein described.

3,769,250

EPOXY HYDRAULIC CEMENT COMPOSITION

Otho Leroy Nikles, Jr., Toms River, N.J., assignor to Resyn Corporation, Linden, N.J.

No Drawing. Filed Sept. 10, 1970, Ser. No. 71,259
The portion of the term of the patent subsequent to Sept. 11, 1990, has been disclaimed
Int. Cl. C04b *7/56*
U.S. Cl. 260—29.2 EP **20 Claims**

The invention relates to a hydraulic cement composition which has admixed therein an aqueous epoxy emulsion composition of an epoxy resin and an emulsifying and curing agent for the resin in amount sufficient to enhance the properties and most notably the tensile, flexural and compressive strength of the cement, when the cement is cured. The emulsifying and curing agent used is of a particular kind, namely, a reaction product of a primary or secondary amine with a diglycidyl ether of a polyglycol. Such curing agents are disclosed in my copending applications Ser. No. 873,501, filed Nov. 3, 1969, now abandoned and Ser. No. 53,010, a continuation thereof, filed July 7, 1970.

3,769,251

PROCESS FOR THE PREPARATION OF AQUEOUS STYRENE/ACRYLIC ACID ESTER COPOLYMER DISPERSIONS

Hubert Wiest, Eduard Bergmeister, and Paul-Gerhard Kirst, Burghausen, and Christian Schmidkonz, Pocking, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany

No Drawing. Filed Nov. 30, 1971, Ser. No. 203,435
Claims priority, application Germany, Dec. 9, 1970, P 20 60 670.6
Int. Cl. C08f *1/13*
U.S. Cl. 260—29.6 TA **7 Claims**

The present invention provides a process for the preparation of an aqueous dispersion of styrene/acrylate ester mixed polymers substantially free of noxious odors consisting essentially of the steps of polymerizing an initial mixture of from 20% to 70% by weight of styrene monomer and from 80% to 30% by weight of a monomer component for a time sufficient for the residual monomer content to fall below 3% by weight of the initial monomer content, thereafter adjusting the pH to between 3 and 7 and adding from 0.2% to 10% by weight, based on the weight of the polymerizate, of a vinyl ester of an alkanoic acid having 1 to 3 carbon atoms, after-polymerizing the mixture at a temperature of from 50° C. to 100° C. for a time sufficient to reduce said residual monomer content below 0.35% by weight, and recovering said aqueous dispersion of styrene/acrylate ester mixed polymers substantially free of noxious odors.

3,769,252

PROCESS FOR PREPARING A FLUOROCARBON POLYMER ANHYDROUS ORGANOSOL

Tuneo Fujii, Suita, and Seisuke Suzue, Takatsuki, Japan, assignors to Daikin Kogyo Co., Ltd.

No Drawing. Filed July 23, 1971, Ser. No. 165,746
Claims priority, application Japan, July 25, 1970, 45/65,341, 45/65,342, 45/65,343
Int. Cl. C08f *45/28, 45/34, 47/28*
U.S. Cl. 260—32.8 R **9 Claims**

A process for preparing a stable, substantially anhydrous organosol of fluorocarbon polymer which comprises admixing an aqueous dispersion of tetrafluoroethylene polymer having a particle size of 0.05 to 0.5 micron, an average particle size of 0.1 to 0.3 micron and a standard specific gravity of 2.20 to 2.30 and/or aqueous dispersion of tetrafluoroethylene-hexafluoropropylene copolymer having a particle size of 0.01 to 0.3 micron, an average particle size of 0.05 to 0.2 micron, a specific melt viscosity at 380° C. of 1×10^3 to 10^6 poises and a ratio by weight of tetrafluoroethylene:hexafluoropropylene of 97/3 to 5/95 with an organic solvent which is insoluble or hardly soluble in water and does not interfere chemically or physically with the said polymer as a transferring solvent and an organic solvent which is soluble in water or an aqueous solution of an electrolyte as a transferring agent so as to transfer the polymer particles from the water layer into the transferring solvent layer and separating the transferring solvent layer from the said water layer.

3,769,253
PRIMER COMPOSITION FOR HEAT CURABLE SILICONE RUBBERS

Joseph Eugene Stevenson, Charleston, S.C., assignor to Stauffer Chemical Company

No Drawing. Continuation-in-part of application Ser. No. 70,196, Sept. 8, 1970, which is a continuation of application Ser. No. 716,340, Mar. 27, 1968, both now abandoned. This application Apr. 5, 1972, Ser. No. 241,421

Int. Cl. C08c *11/22*

U.S. Cl. 260—33.6 SB **4 Claims**

A primer composition for bonding a heat curable silicone rubber to a metal or fabric substrate, said composition comprising an alkenyl acyloxysilane, an organic peroxide, a silicone polymer substantially free of hydroxyl groups containing from 0.01 to about 5.0 mole percent of unsaturated hydrocarbon groups and a hydrocarbon or halogenated hydrocarbon solvent.

3,769,254
HIGH STRENGTH PRESSURE-SENSITIVE ADHESIVES

Carl C. Anderson, Gibsonia, and Rudolf Maska and Suryya K. Das, Pittsburgh, Pa., assignors to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 26,145, Apr. 6, 1970. This application Aug. 27, 1971, Ser. No. 175,691

Int. Cl. C08f *45/44*

U.S. Cl. 260—33.4 PQ **28 Claims**

Pressure-sensitive adhesives having improved cohesive strength are obtained by reacting an acrylic interpolymer containing an interpolymerized acrylic monomer containing one or more groups having reactive hydrogen atoms such as a hydroxyalkyl ester or an ethylenically unsaturated carboxylic acid with a metal alkoxide, chelated metal alkoxides such as chelated titanium esters being particularly preferred. Adhesives produced in this manner have improved cohesive strength and shrink resistance on backings while maintaining good tack and adhesive properties.

3,769,255
TiO_2 PIGMENTS

Gerard Martin Sheehan and George Leathwhite Roberts, Jr., Savannah, Ga., and Paul Montgomery Dupree, Flemington, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 848,353, Aug. 7, 1969, now Patent No. 3,658,566. This application Apr. 14, 1972, Ser. No. 244,245

Int. Cl. C08f *45/04*

U.S. Cl. 260—41 A **3 Claims**

A vinyl asbestos tile composition with improved properties obtained through adding to the tile preparation a pigmentary TiO_2 which is treated with the combined oxides of silicon and aluminum, the oxides being used in a weight ratio of 5–1 and in a concentration such that the pigment will have at least 0.5% by weight of oxides coating.

3,769,256
RUBBERY COMPOSITIONS

Toshio Yoshimoto, 2134–3 Ogawa-Higashi-cho; Takaaki Imamura, 2800–1 Ogawa-Higashi-cho; and Kazuo Tanaka, 864–1, 2-chome, Onda-machi, all of Tokyo, Japan

No Drawing. Continuation of abandoned application Ser. No. 743,923, July 11, 1968. This application Apr. 18, 1972, Ser. No. 245,198

Int. Cl. C08c *11/10;* **C08d** *5/00*

U.S. Cl. 260—41.5 A **1 Claim**

Rubbery composition is prepared by mixing 100 parts by weight of a hydrogenated hydrocarbon copolymer having a glass transition temperature of above —100° C. and having polymeric monomer units which consist of (1) 5 to 60% by weight of vinyl-aromatic hydrocarbon units, (2) not less than 10% by weight of hydrogenated conjugated diolefin units and (3) unhydrogenated conjugated diolefin units, wherein said vinyl-aromatic hydrocarbon units are essentially randomly distributed in the polymeric monomer units, and 5 to 200 parts by weight of an inorganic reinforcing filler having a number average particle diameter of less than 500 mμ.

3,769,257
PREPARATION OF SOLUTION POLYMER MASTERBATCHES

Porter F. Gridley, Andover, James J. Brennan, Jr., Scituate, Frank R. Williams, Quincy, and Erivan Hagopian, Lexington, Mass., assignors to Cabot Corporation, Boston, Mass.

No Drawing. Continuation-in-part of application Ser. No. 75,239, Sept. 24, 1970. This application Feb. 22, 1972, Ser. No. 228,246

Int. Cl. C08c *11/18;* **C08d** *5/00;* **B01d** *1/14*

U.S. Cl. 260—41.5 MP **9 Claims**

This disclosure relates to a continuous process for the preparation of black masterbatches of solution polymer wherein drying of the rubbery crumb is accomplished by contacting the crumb with a gaseous medium at a temperature and velocity sufficient to aspirate and dry the crumb.

3,769,258
THERMAL STABILIZATION OF ADDITION POLYMERS

Dagobert E. Stuetz, Westfield, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Original application May 19, 1966, Ser. No. 551,222, now Patent No. 3,671,488. Divided and this application June 1, 1972, Ser. No. 258,712

Int. Cl. C08f *45/58;* **C08g** *51/58*

U.S. Cl. 260—45.8 N **10 Claims**

A composition comprising an addition polymer and a stabilizing amount of acridine.

3,769,259
POLYMERS CONTAINING DIAZEPINONE AS AN ULTRAVIOLET STABILIZER

Alexander Michael Chalmers, Cheadle, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Jan. 17, 1972, Ser. No. 218,518

Claims priority, application Great Britain, Jan. 26, 1971, 3,160/71

Int. Cl. C08f *45/60*

U.S. Cl. 260—45.8 N **4 Claims**

Disclosed are stabilizing compositions comprising diazepinone. The new compositions possess good light stability.

3,769,260
IMPACT-RESISTANT POLYETHYLENE TEREPHTHALATE COMPOSITIONS

Leon Segal, Morristown, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed June 13, 1972, Ser. No. 262,428

Int. Cl. C08d *9/10*

U.S. Cl. 260—40 R **10 Claims**

Thermoplastic molding compositions are prepared from a mixture of a linear saturated polyester and an α-olefin polymer or copolymer which has been terminally carboxylated by controlled oxidation. These mixtures are distinguished by increased impact strength, good dispersion of the olefin phase, and a high degree of stability and compatibility.

3,769,261
METHOD OF PREPARING STABLE COPOLYMERS OF ETHYLENE AND AT LEAST ONE ETHYLENICALLY UNSATURATED CARBOXYLIC ACID AND THE PRODUCT OBTAINED THEREBY

Bert Howard Clampitt, Shawnee Mission, Kans., Raymond Myrl Henry, Gibsonia, Pa., and Joseph William Jones, Jr., Shawnee Mission, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 8, 1972, Ser. No. 251,144

Int. Cl. C08f *45/60*

U.S. Cl. 260—45.9 R **15 Claims**

A method of making a copolymer of ethylene and at least one ethylenically unsaturated carboxylic acid comprising the steps of first thermally decomposing the ester moieties of a copolymer of ethylene and the isopropyl ester of at least one ethylenically unsaturated carboxylic acid and thereafter contacting the thermally decomposed copolymer with a diamine. The resulting ethylene-carboxylic acid copolymer exhibits a storage stable melt index. The diamine contacting may be accomplished with either an aqueous solution of a suitable diamine or a vapor thereof. When an aqueous solution is employed, the contacting will generally be accomplished at a temperature between about 0 and 50° C. while a temperature between 20 and 100° C. will be used for vapor phase contacting. The contacting time is, generally, short and the copolymer product will contain less than 5000 p.p.m. by weight diamine, preferably less than 1000 p.p.m. and most preferably less than 100 p.p.m.

3,769,262
THERMAL STABILIZATION OF ADDITION POLYMERS

Joseph Di Pietro, Alma, Mich., and Dagobert E. Stuetz, Westfield, N.J., asssignors to Celanese Corporation, New York, N.Y.

No Drawing. Original application May 19, 1966, Ser. No. 551,222, now Patent No. 3,671,488. Divided and this application June 9, 1972, Ser. No. 261,173

Int. Cl. C08f *45/58*; C08g *51/58*

U.S. Cl. 260—45.7 S **10 Claims**

A composition comprising an addition polymer and a stabilizing amount of 9,10-dihydroanthracene sodium sulfonate.

3,769,263
VINYL HALIDE POLYMERS STABILIZED WITH TWO ORGANOTIN COMPOUNDS

William E. Mayo, Lunenburg, Mass., and Joel B. Gottlieb, Edison, N.J., assignors to M & T Chemicals Inc., Greenwich, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 680,444, Nov. 2, 1967. This application May 12, 1971, Ser. No. 142,750

The portion of the term of the patent subsequent to Jan. 28, 1985, has been disclaimed

Int. Cl. C08f *45/62*

U.S. Cl. 260—45.75 K **6 Claims**

This invention relates to improved two-component stabilizers comprising a compound of the formula $(RSnX_{1.5})_n$ in combination with a compound of the formula $R'_2SnSR''_2$ and to halogen-containing vinyl resin compositions stabilized against the deteriorative effect of heat, said resin compositions containing effective amounts of the improved two component stabilizer. R is a monovalent alkyl hydrocarbon radical containing between 1 and 4 carbon atoms, inclusive; R′ is a monovalent alkyl hydrocarbon radical containing between 1 and 12 carbon atoms, inclusive; R″ is the residue of a carboxylic acid ester, a benzyl radical or a hydrocarbon radical selected from the same group as R′, X represents sulfur or specified oxygen-sulfur mixtures and *n* is an integer between about 2 and 5.

3,769,264
FILM-FORMING CONDENSATION POLYMERS

John C. Wilson and Frederick L. Hamb, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,506

Int. Cl. C03c *1/78*; C08g *17/08, 22/04*

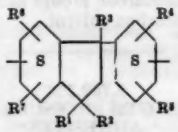
U.S. Cl. 260—75 R **15 Claims**

A composition of matter comprising a polymer having the structure

$$\{X—A—X—(NH)_J—R^9—(NH)_J\}_n$$
$$\{X^1—R^8—X^1—(NH)_J—R^{10}—(NH)_J\}_m$$

wherein:

A is



n is a mole fraction and is a positive number less than or equal to 1;

m is a mole fraction and equals 1—*n*;

R^1 and R^3 are independently selected from the group consisting of hydrogen and alkyl radicals of from one to six carbon atoms;

R^2 is an alkyl radical of from one to six carbon atoms;

R^4, R^5, R^6 and R^7 are independently selected from the group consisting of hydrogen, aryl radicals, halogen atoms, nitro radicals, cyano radicals, amino radicals and alkoxy radicals;

R^8, R^9 and R^{10} are independently selected aliphatic or aromatic radicals;

J is an integer and equal to zero or one;

and —X—A—X— and —X^1—R^8—X^1— and J are interdependently related according to the following schedule:

—X—A—X—	—X^1—R^8—X^1—	J =
—O—C(=O)—A—C(=O)—O—	—O—C(=O)—R^8—C(=O)—O—	0
—C(=O)—O—H_3C—A—CH_3O—C(=O)—	—C(=O)—O—R^8—O—C(=O)—	0 or 1

3,769,265
POLYURETHANES BASED ON TERTIARY ALCOHOL-MODIFIED NAPHTHYLENE - 1,5 - DIISOCYANATE

Gerhard Grögler, Leverkusen, Wilhelm Kallert, Cologne, and Ernst Meisert, Leverkusen-Steinbuchel, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 14, 1972, Ser. No. 226,263

Claims priority, application Germany, Feb. 18, 1971, P 21 07 678.8

Int. Cl. C08g *22/26*

U.S. Cl. 260—75 NT **7 Claims**

A process is provided for the production of polyurethane elastomers by reacting naphthylene-1,5-diisocyanate with a dihydroxy compound which has a molecular weight of 500 to 6,000 to produce a prepolymer which contains isocyanate groups and reacting the prepolymer with glycols, characterized in that a modified naphthylene-1,5-diisocyanate which contains 0.02 to 0.5 mol, preferably 0.1 to 0.25 mol, of urea groups or biuret groups per mol of naphthylene-1,5-diisocyanate is used.

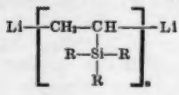
3,769,266

PROCESS FOR POLYMERIZING UNSATURATED MONOMERS WITH DILITHIUM ORGANOSILANE OLIGOMERS

Nikolai Sergeevich Nametkin, Leninsky prospekt 13, kv. 11; Serge Garievich Durgarian, ulitsa Garibaldi 21, korpus 3, kv. 67; Vadim Ivanovich Kopkov, ulitsa Zelenogradskaya 25, korpus 2, kv. 194; Valery Samuilovich Khotimsky, Konkovo-Derevlevo, 1 miqroraion, korpus 7, kv. 147; and Irina Sergeevna Bryantseva, Leninsky prospekt 69, kv. 83, all of Moscow, U.S.S.R.; and Gennady Nikolaevich Petrov, Zheleznodorozhny pereulok 7, kv. 35; Gennady Mikhailovich Tolstopyatov, Bulvar Novatorov 88, kv. 146; Tatyana Vladimirovna Stadnichuk, prospekt Kosmonavtov 48, kv. 110; Tatyana Alexeevna Kornilova, Tallinskoe shosse 48, kv. 55; and Anna Berkovna Shoikhet, Varshavskaya ulitsa 69, kv. 111, all of Leningrad, U.S.S.R.

Filed Aug. 13, 1970, Ser. No. 63,517
Claims priority, application U.S.S.R., Aug. 13, 1969, 1358104
Int. Cl. C08f *1/28, 7/04*
U.S. Cl. 260—80 PS 10 Claims

Diene and vinyl monomer polymerization catalysts consisting of dilithium organosilane oligomers represented by



wherein R denotes the same or different C_1–C_{10} alkyl radicals, or alkl radicals or aryl radicals, and *n* is an integer from 2 to 30.

The claimed catalysts are useful for polymerizing diene and vinyl monomers in hydrocarbon media under homogeneous conditions.

The process may find application in the synthetic rubber industry.

3,769,267

PROCESS FOR POLYMERIZATION OF CONJUGATED DIENES

Tai Chun Cheng, Mogadore, and Adel F. Halasa, Bath, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Feb. 16, 1971, Ser. No. 115,711
Int. Cl. C08d *1/32, 3/08;* C08f *19/08*
U.S. Cl. 260—83.7 16 Claims

Conjugated dienes are polymerized by a new catalyst system which permits control of the molecular weight and gives a more easily processed product. This catalyst system comprises (1) an alkali metal, namely Li, Na, K, Cs and Rb, modified with (2) an alkoxide of K, Na and Li, in which the alkoxide has 1–10 carbon atoms. The diene polymers produced by this process have controllable molecular weights in the range of 5,000–1,000,000, preferably 100,000–500,000, broad molecular weight distribution, glass transition temperatures higher than normally obtained, a high degree of branching, and are more easily processed in the production of rubber and other compositions for commercial use.

3,769,268

SHORTSTOPPING FREE RADICAL POLYMERIZATION OF VINYLIDENE MONOMERS

Paul J. George, West Richfield, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Apr. 14, 1972, Ser. No. 244,275
Int. Cl. C08f *3/30, 3/68*
U.S. Cl. 260—89.5 A 11 Claims

The free radical polymerization of vinylidene monomers having a terminal $CH_2{=}C<$ grouping, with a catalyst system comprising an alkyl borane and a hydroperoxide of the formula ROOH in which R is hydrogen or a hydrocarbon radical, or a catalyst system of an alkyl borane and oxygen, is effectively terminated by adding a borohydride, such as $NaBH_4$, to the polymerization mixture.

3,769,269

NUCLEATION OF NORMALLY CRYSTALLINE VINYLIDENE CHLORIDE POLYMERS

Henry N. Beck, Walnut Creek, Calif., and Harvey D. Ledbetter and John A. Schmitt, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Sept. 5, 1972, Ser. No. 286,172
Int. Cl. C08f *3/28*
U.S. Cl. 260—91.7 4 Claims

Normally crystalline vinylidene chloride polymers containing at least about 70 percent by weight of vinylidene chloride with any remainder being vinyl chloride are admixed with minor amounts of a compound selected from the group consisting of melamine, trichloromelamine, 5,6-dichlorobenzimidazole, 2 - phenylbenzimidazole, 6 - nitrobenzimidazole, 6-nitrobenzimidazole sodium salt and 6-nitroindazole, among other compounds, to provide improved crystallization rates.

3,769,270

METHOD OF POLYMERIZING BUTADIENE WITH THE AID OF A THREE COMPONENT CATALYST COMPRISING A MIXTURE OF (1) A GROUP II OR III METAL HYDRIDE OR DERIVATIVES THEREOF, (2) AN ORGANONICKEL OR COBALT COMPOUND AND (3) A FLUORINE CONTAINING MATERIAL

William M. Saltman and Morford C. Throckmorton, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation of abandoned application Ser. No. 702,165, Feb. 1, 1968. This application Dec. 10, 1969, Ser. No. 880,495
Int. Cl. C08d *3/06*
U.S. Cl. 260—94.3 4 Claims

A method and a catalyst system for the solution polymerization of butadiene or butadiene in mixture with other diolefins to form polymers containing a high content of cis-1,4 addition is described. The solution polymerization is carried out under conventional polymerization conditions. The catalyst employed is a mixture of (1) at least one compound selected from the group consisting of hydrides of metals of Groups II and III of the Periodic Table and their monomeric or polymeric halide derivatives, amine derivatives and complexes of these hydrides with amines, ethers or other molecules capable of forming complex compounds with these hydrides, (2) at least one compound selected from the class consisting of organonickel and organocobalt compounds and (3) at least one fluorine containing compound selected from the group consisting of boron trifluoride, boron trifluoride addition complexes, metal fluorides, hydrogen fluoride and trialkyltin fluorides.

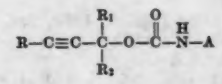
3,769,271

N-PROTECTED AMINO ACIDS AND PEPTIDES

George Lee Southard, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Apr. 15, 1971, Ser. No. 134,430
Int. Cl. C07c *103/52;* C07g *7/00*
U.S. Cl. 260—112.5 27 Claims

Novel N-protected amino acids represented by the formula



where R is H, Cl, phenyl or substituted phenyl; R_1 is H or C_1–C_4 alkyl, R_2 is C_1–C_4 alkyl and A is the residue

of an amino acid, are obtained by reacting an acetylenic chloro or fluoroformate ester or a phenyl carbonate ester with amino acids. N-protected amino acids are employed in method of peptide synthesis comprising coupling an N-protected amino acid or an active ester thereof with amino acids or peptides to provide N-terminal protected peptides. Hydrogenolysis of N-protected peptide products over 5 percent Pd/C at neutral or acidic pH affords desired peptides. Acetylenic N-protecting groups provided are readily cleaved in the presence of amino acids or peptides having sulfur containing group.

3,769,272

LIGNIN ADDUCT

Harold L. Hintz, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

No Drawing. Filed May 25, 1972, Ser. No. 256,778

Int. Cl. C07g *1/00*

U.S. Cl. 260—124 R **4 Claims**

Lignin adducts comprising the reaction product of lignin with up to 20 moles of 3-chloro-2-hydroxypropane-1-sulfonate per 1000 grams of lignin. These adducts are water soluble and are useful as surfactants, particularly dispersants.

3,769,273

BIS-UREA ADDUCTS OF MACROLIDE ANTIBIOTICS

Eddie H. Massey, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of application Ser. No. 865,215, Oct. 9, 1969, which is a continuation-in-part of application Ser. No. 687,498, Dec. 4, 1967, both now abandoned. This application Oct. 20, 1971, Ser. No. 191,068

Int. Cl. C07c *129/18*

U.S. Cl. 260—210 AB **5 Claims**

Bis-urea adducts prepared from macrolide antibiotics containing an aldehyde group, useful in antibiotic stabilization.

3,769,274

AMINOPHENYL-CYCLOAMIDINES

Hartmund Wollweber, Wuppertal-Elberfeld, Germany, and Winfried Flucke, Beenleigh, Queensland, Australia, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 9, 1971, Ser. No. 151,576

Claims priority, application Germany, June 13, 1970, P 20 29 297.1

Int. Cl. C07d *27/04, 41/08, 29/12*

U.S. Cl. 260—239 BF **27 Claims**

Derivatives of 2-[4-(substituted amino) aminophenylimino] pyrrolidine, -piperidine or hexahydroazepine, optionally bearing alkyl or alkenyl substitution in the 1-position of the specified heterocyclic groups, are anthelmintics. A number of processes for the preparation of these compounds, of which 2-(4-carbethoxyaminophenylimino)-1-methylpyrrolidine is a typical embodiment, are disclosed.

3,769,275

1-(DI-LOWER ALKYLAMINOALKYL)-1,3-DIHYDRO-5-PHENYL-2H-1-BENZAZEPIN - 2 - ONES AND INTERMEDIATES THEREFOR

Bernard Loev, Broomall, and Charles L. Zirkle, Berwyn, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Sept. 9, 1970, Ser. No. 70,879

Int. Cl. C07d *41/06, 41/08*

U.S. Cl. 260—239.3 B **7 Claims**

The compounds are 1 - (di-lower alkylaminoalkyl)-1,3-dihydro - 5 - phenyl - 2H - 1 - benzazepin-2-ones which inhibit gastric acid secretion and intermediates for the preparation thereof.

3,769,276

SELENIUM AND TELLURIM COMPOUNDS OF HALOGENATED ARENES AND PREPARATION

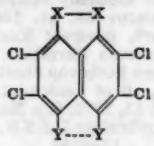
Erwin Klingsberg, Mountainside, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 701,076, Jan. 29, 1968. This application Aug. 5, 1971, Ser. No. 169,501

Int. Cl. C07d *81/00, 83/00*

U.S. Cl. 260—239 R **6 Claims**

A compound having the following formula is provided:



wherein X is selenium or tellurium in a peri bridge to the 1 and 8 positions of the naphthalene nucleus, Y is chlorine or X, and when Y is X, the two Y are in a peri bridge to the 4 and 5 positions of the naphthalene nucleus. These compounds are useful biocides and pigments, as well as serving as starting materials for the preparation of dielectric compounds. In addition, a method for preparing such compound is also provided.

3,769,277

PREPARATION OF Δ^3-4 CARBOXY CEPHALOSPORINS HAVING A 3-VINYL OR SUBSTITUTED 3-VINYL GROUP

Alan Gibson Long, Greenford, and Niall Galbraith Weir, London, England, assignors to Glaxo Laboratories Limited, Greenford, England

No Drawing. Filed Jan. 20, 1971, Ser. No. 108,155

Claims priority, application Great Britain, May 6, 1970, 21,907/70; Jan. 12, 1971, 3,464/70, 28,194/70

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **4 Claims**

The invention is concerned with the preparation of Δ^3-4-carboxy cephalosporin antibiotics possessing a 3-vinyl or substituted 3-vinyl groups by condensation of 3-formyl cephalosporin compounds with a phosphorane ylid.

3,769,278

ANTIHYPERTENSIVE 6-SUBSTITUTED 3-HYDRAZINO-PYRIDAZINES AND THEIR PREPARATION

Giorgio Pifferi, Milan, Italy, assignor to I.S.F. S.p.A., Milan, Italy

No Drawing. Filed Aug. 4, 1971, Ser. No. 169,089

Claims priority, application Italy, Dec. 15, 1970, 33,025/70

Int. Cl. C07d *51/02*

U.S. Cl. 260—240 G **6 Claims**

Antihypertensive compounds comprise 3-hydrazinopyridazine derivatives substituted in the 6-position with an N-(2-hydroxypropyl) amino group. A new method for the preparation of these compounds involves the intermediate isolation of their hydrazones and subsequent decomposition of the hydrazones with an acid to form the desired hydrazino derivatives.

3,769,279

HYDRAZONE DYESTUFFS

Hans-Peter Kuhlthau and Roderich Raue, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 18, 1971, Ser. No. 172,876

Claims priority, application Germany, Aug. 18, 1970, P 20 40 872.4

Int. Cl. C09b *23/04*

U.S. Cl. 260—240 G **10 Claims**

Hydrazone dyestuffs, processes for their manufacture and their use for dyeing and printing of polyacrylnitrile, copolymers of acrylnitrile with other vinyl compounds,

acid modified aromatic polyesters, acid modified polyamides, leather, tanned cotton, cellulose, polyurethanes and for the production of writing liquids and stamping inks.

3,769,280
PROCESS FOR ACYLATION OF CEPHALOSPORIN ESTERS
George Parker, Prescot, England, assignor to Lilly Industries Limited, London, England
No Drawing. Filed Sept. 24, 1971, Ser. No. 183,643
Claims priority, application Great Britain, Sept. 11, 1971, 42,454/71
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **2 Claims**

Acylation of the p-nitrobenzyl ester of 7-aminocephalosporanic acid or 7-aminodesacetoxycephalosporanic acid with a mixed anhydride is improved when carried out at a temperature between below about −15° C. and about −50° C.

3,769,281
DEBLOCKING PROCESS FOR CEPHALOSPORIN ANTIBIOTICS
Robert R. Chauvette, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
No Drawing. Filed July 9, 1970, Ser. No. 53,646
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **8 Claims**

In the preparation of cephalosporins (like cephalexin) containing an amino function that is protected during acylation by a tertiary-butoxycarbonyl group, the protecting group is removed by treatment of the acylation product with paratoluenesulfonic acid monohydrate in acetonitrile, nitromethene, or chloroform.

3,769,282
1,4,2-DIOXAZINE DERIVATIVES AND PREPARATION
Amedeo Omodei-Sale and Pietro Consonni, Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy
No Drawing. Filed Apr. 26, 1972, Ser. No. 247,824
Claims priority, application Italy, Apr. 29, 1971, 23,848/71
Int. Cl. C07d *87/00*
U.S. Cl. 260—244 R **6 Claims**

The compounds of this invention are 1,4,2-dioxazine derivatives of the formula

(I)

R is hydrogen, 1 to 10 carbon alkyl, 3 to 6 carbon cycloalkyl, 2 to 4 carbon alkenyl, benzyl, lower alkoxy substituted benzyl, lower alkoxy substituted phenyl, styryl, lower alkoxy substituted styryl, pyridyl, lower alkoxy substituted pyridyl, α,α - dimethyl-3,4-methylenedioxybenzyl or naphthyl group.

The compounds of this invention are prepared by reacting an acyl halide or an anhydride of the formula

$$R—COX \text{ or } (RCO)_2 \qquad (II)$$

wherein X is halogen or OCCO-lower alkyl and R has the meaning given above with a haloethylhydroxylamine of the formula

$$NH_2—OCH_2—CH_2\text{-halo} \qquad (III)$$

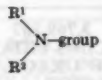
in the presence of an acid acceptor such as, for example, a tertiary amine to obtain an N-acyl-O-(6-haloethyl)-hydroxylamine of the formula

$$R—CONHOCH_2—CH_2\text{-halo} \qquad (IV)$$

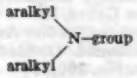
wherein R has the meaning given above and in reacting the compound of Formula IV with a strong base such as, for instance, an alkali metal salt of a lower alkanol, an alkali metal hydride, an alkali metal salt of hydrocarbon or an alkali metal amide in a suitable inert organic solvent to form the 1,4,2-dioxazine derivative. The compounds of the invention have central nervous system activity.

3,769,283
N-ACYL SYDNONIMINE DERIVATIVES
Katsutada Masuda, Ashiya, and Yoshio Imashiro, Suita, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
No Drawing. Continuation-in-part of abandoned application Ser. No. 651,137, July 5, 1967. This application Sept. 14, 1970, Ser. No. 72,211
Claims priority, application Japan, July 4, 1966, 41/43,499
Int. Cl. C07d *87/42, 87/46*
U.S. Cl. 260—247.2 A **5 Claims**

Derivatives of the sydnonimines according to U.S. Pat. No. 3,312,690, wherein the imino group is replaced by N-formyl, N-acetyl, N-propionyl, N-monochloro acetyl, N-dichloro acetyl, N-trichloro acetyl, N-trifluoro acetyl, N-phenoxy acetyl, N-phenoxy propionyl, N-phenyl acetyl, N-phenyl propionyl, N-cinnamoyl, N-benzoyl, N-ethoxy carbonyl, N-benzyloxy carbonyl, N-methyl carbamoyl, N-ethyl carbamoyl, N-phenyl carbamoyl, N-nicotinoyl, N-isonicotinoyl, N - (N' - carbobenzyloxy alanyl), N-methyl sulfonyl, N-phenyl sulfonyl, N-p-chlorophenyl sulfonyl, N-nitroso, etc., and pharmaceutically acceptable salts thereof have superior utility as hypotensive drugs, coronary and peripheral vessel dilators or muscle relaxants. The 3-positioned



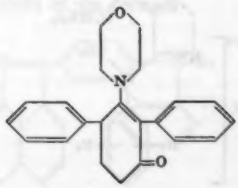
may also be an



each aralkyl having 7 to 9 carbon atoms.

3,769,284
2,4-DISUBSTITUTED 3-AMINO-CYCLOHEXENONES
James Roger Hargreaves, Sale, Raymond Jeffrey, Warrington, and Peter William Hickmott, Furness Vale, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed Sept. 11, 1969, Ser. No. 857,200
Claims priority, application Great Britain, Sept. 17, 1968, 44,053/68
Int. Cl. C07d *87/34*
U.S. Cl. 260—247.7 K **3 Claims**

2,4-disubstituted 3-amino-cyclohex-2-en-1-ones are described which bear in 2- and 4-position aralkyl or aryl groups or an alkylene bridge linked to both positions. These compounds and their salts are light-stabilizers for light-sensitive materials, e.g. thermoplastic vinyl and vinylidene polymers and the like. A typical compound has the formula



3,769,285

2,2'-(LOWER-ALKYLENEDITHIO)-BIS - 3,5,6 - TRIHALO PYRAZINES AND DERIVATIVES THEREOF

Leonard Levine, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Feb. 3, 1969, Ser. No. 796,147, now Patent No. 3,641,033. Divided and this application Feb. 10, 1971, Ser. No. 111,631

Int. Cl. C07d *51/76*

U.S. Cl. 260—250 R 8 Claims

Substituted bis(halogenated azine) compounds such as 4,4 - (tetramethylenedithio)bis(2,3,5,6 - tetrachloropyridine) or 2,2' - [sulfonylbis(ethylenesulfinyl)]bis(3,5,6-trichloropyrazine) are prepared from haloazines and alkanedithiols. The compounds are useful as pesticides, particularly for the control of plants, including bacteria, fungi and higher plants.

3,769,286

TRIALKOXY QUINAZOLINES

Hans-Jurgen E. Hess, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Original application May 21, 1970, Ser. No. 39,541, now Patent No. 3,669,968. Divided and this application Apr. 3, 1972, Ser. No. 240,865

Int. Cl. C07d *51/48*

U.S. Cl. 260—251 Q 5 Claims

ABSTRACT OF THE DISCLOSURE

A series of novel 2-substituted-4-amino-6,7,8-trialkoxyquinazolines have been prepared, including their acid addition salts. These compounds are useful in therapy as potent antihypertensive agents. Methods for their preparation are described in detail, including various synthetic routes leading to the required novel intermediates.

3,769,287

METHOD OF REDUCING THIAZOLOPYRIMIDINES BY REACTION OF URACIL THIOUREAS WITH HYDROGEN PEROXIDE

Arthur Berger, Skokie, Ill., and Edeltraut E. Borgaes, Sindelfingen, Germany, assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

No Drawing. Original application Aug. 13, 1969, Ser. No. 849,899, now abandoned. Divided and this application Nov. 18, 1971, Ser. No. 200,207

Int. Cl. C07d *99/10*

U.S. Cl. 260—256.5 R 1 Claim

The method of making thiazolopyrimidines by reaction of uracil thioureas with hydrogen peroxide, for example, 1-allyl-3-(2,4-diketo - 1,3 - dimethyl - 1,2,3,4 - tetrahydropyrimidin-6-yl)-2-thiourea is reacted with hydrogen peroxide to yield 2-allylamino-4,6-dimethyl-thiazolo[4,5-d] pyrimidine-5,7-dione.

3,769,288

BICYCLIC NITROGENOUS COMPOUNDS AND SALTS

Helmut Stähle, Herbert Köppe, Werner Kummer, and Hans-Wolfgang Samtleben, Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

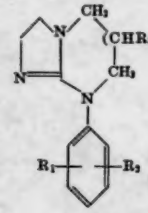
No Drawing. Filed Apr. 12, 1972, Ser. No. 243,426

Claims priority, application Germany, Apr. 15, 1971, P 21 18 261.6

Int. Cl. C07d *51/46*

U.S. Cl. 260—256.4 F 6 Claims

Compounds of the formula



wherein

R_1 and R_2 are each hydrogen, halogen, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 2 carbon atoms, cyano or trifluoromethyl,

R_3 is hydrogen or hydroxy, and

n is 0, 1 or 2,

and their non-toxic, pharmacologically acceptable acid addition salts; the compounds are useful as hypotensives, analgesics, sedatives and gastric juice secretion inhibitors.

3,769,289

HEXACHLOROPENTADIENE ADDUCTS OF UNSATURATED AMIDES

Robert R. Mod, Frank C. Magne, and Evald L. Skau, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Nov. 21, 1969, Ser. No. 878,922, now Patent No. 3,663,582. Divided and this application Dec. 16, 1971, Ser. No. 208,947

Int. Cl. C07d *29/30*

U.S. Cl. 260—293.56 3 Claims

This invention relates to certain new nitrogen-containing compounds, more particularly to N-substituted and N, N-disubstituted amides, the acyl moieties of which are the acyl moieties of the hexachlorocyclopentadiene adducts of either 9-octadecenoic or 10-undecenoic acids.

The compounds which are the subject of this invention are characterized by the fact that as growth inhibitors they are effective against a variety of bacteria, yeast, and molds, some of which are pathogenic. They are also useful as plasticizers.

3,769,290

NOVEL HERBICIDES

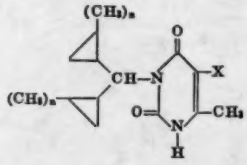
George Levitt, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 28, 1972, Ser. No. 267,201

Int. Cl. C07d *51/30*

U.S. Cl. 260—260 3 Claims

3-(dicyclopropylmethyl)-6-methyluracils having the following formula:



wherein:

X is hydrogen, methyl, or halogen; and

n is 0 or 1;

are selective preemergence herbicides which control pigweed and many other weeds at a rate of application of 1/16 lb. per acre without injury to valuable crops, such as wheat, corn, rice, or soybeans. At 1/4 lb. per acre, these uracils kill nearly all plants.

3,769,291

2-OXO-1(2H)-PYRIDINECARBONITRILE AND SUBSTITUTED DERIVATIVES THEREOF

William Lawrence Parker, North Brunswick, and Saul Lewis Neidleman, Trenton, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

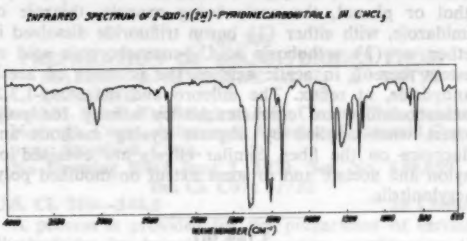
Continuation-in-part of abandoned application Ser. No. 111,125, Jan. 29, 1971. This application May 28, 1971, Ser. No. 148,037

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 R 5 Claims

2-oxo-1(2H)-pyridinecarbonitrile and derivatives there-

of have anticandidal activity. They may also be reacted



with a nucleophile to form a 2-pyridone and a cyanated nucleophile.

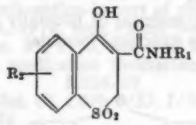
3,769,292

N-(PYRIDYL)2H 1-BENZOTHIOPYRAN-3-CARBOXAMIDE-4-HYDROXY 1,1-DIOXIDES

Harold Zimes, Rockaway, and Neil A. Lindo, Chatham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Apr. 28, 1972, Ser. No. 248,509
Int. Cl. C07d *31/44*
U.S. Cl. 260—294.8 C 2 Claims

Compounds of the formula:



I

wherein R_1 is an aromatic heterocyclic group and R_2 is hydrogen, alkyl, aralkyl, alkoxy, halogen, cyano, nitro, trifluoromethyl, etc., are disclosed. These compounds are useful as anti-inflammatory agents.

3,769,293

OXAZOLINE FLAVORING AGENTS AND FLAVOR EXTENDERS

Donald S. Hetzel, New London, and Anibal Torres, Waterford, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 34,876, May 5, 1970. This application June 7, 1971, Ser. No. 150,768
Int. Cl. C07d *85/36*
U.S. Cl. 260—307 F 3 Claims

A series of 2,4,5-alkyl-substituted 3-oxazolines e.g. 2-isopropyl - 4,5 - diethyl - 3 - oxazoline and their use as flavoring agents and flavor extenders. The use of 2,5-dialkyl-2-oxazolines as flavoring agents and flavor extenders.

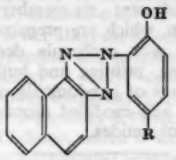
3,769,294

2-(2'-HYDROXY-5'-OCTYLPHENYL) NAPHTHOTRIAZOLE

Sigmund C. Catino, Castleton, and Albert F. Strobel, Delmar, N.Y., assignors to GAF Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 504,206, Oct. 23, 1965. This application May 15, 1970, Ser. No. 37,904
Int. Cl. C07d *55/04*
U.S. Cl. 260—308 B 1 Claim

An organic composition stabilized against degradation due to ultraviolet light comprising an organic material normally subject to such degradation and a minor amount of an ultraviolet light absorbing compound of the formula:



wherein R is an alkyl radical, preferably an alkyl radical of 1 to 8 carbon atoms.

3,769,295

NITROFURYL DERIVATIVES OF 5-SUBSTITUTED ISOXAZOLINES

William Hoyle, Bramhall, and Graham Arton Howarth, Wilmslow, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Aug. 14, 1968, Ser. No. 752,479
Claims priority, application Great Britain, Aug. 26, 1967, 39,351/67
Int. Cl. C07d *99/02*
U.S. Cl. 260—307 F 7 Claims

5-nitro-2-furyl-2-isoxazolines useful as antimicrobial agents; pharmaceutical compositions containing these compounds and methods for the treatment of microbial infections, particularly urinary tract infections and for the protection of organic material susceptible to microbial attack, employing these compounds. An illustrative embodiment is 5-cyanoacetamidomethyl-3-(5-nitro-2-furyl)-2-isoxazoline.

3,769,296

3-OXA-1-AZASPIRO[4,4]NON-7-ENE-2,4-DIONE AND DERIVATIVES THEREOF

Harvey E. Alburn, West Chester, and Horace Fletcher III, Montgomery, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Original application Nov. 20, 1968, Ser. No. 777,506, now Patent No. 3,594,413. Divided and this application Sept. 4, 1970, Ser. No. 69,913
Int. Cl. C07d *85/34*
U.S. Cl. 260—307 B 2 Claims

This invention is concerned with the preparation of

cyclopentene-1,1-dicarboxamides;
1,3-diazaspiro[4,4] nonene-2,4-diones;
1-aminocyclopentene-1-carboxylic acids;
1-(N-alkylamino)cyclopentene-1-carboxylic acids; and
3-oxa-1-azaspiro[4,4] nonene-2,4-diones

which are intermediates in the preparation of 6-(1-aminocyclopentene-1-carboxamido)penicillanic acids which are useful antibacterial agents.

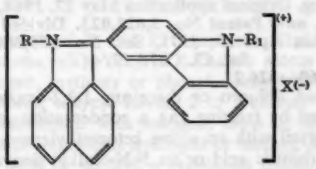
3,769,297

CARBAZOLE CATIONIC DYESTUFFS

Alfred Brack, Leverkusen, and Walter Gomm, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 1, 1971, Ser. No. 119,968
Claims priority, application Germany, Mar. 6, 1970, P 20 10 578.6
Int. Cl. C07d *27/72*
U.S. Cl. 260—315 16 Claims

Cationic dyestuffs of the formula



wherein R represents an alkyl, cycloalkyl, aralkyl or aryl radical, R_1 represents an alkyl, cycloalkyl or aralkyl radical or R or R_1 represents an alkyl radical which is bonded to an adjacent six-membered ring, and X represents an anion, which are prepared by condensation of naphtholactams with carbazole derivates and which are used for dyeing, printing and bulk dyeing of polymers and copolymers of acrylonitrile or of asymmetrical dicyanethylene, of acid-modified aromatic polyesters and of acid-modified polyamides.

3,769,298

SUBSTITUTED AMINOMETHYLCARBAZOLES

James M. McManus, Old Lyme, and Max W. Miller, Stonington, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 830,104, June 3, 1969. This application Apr. 2, 1971, Ser. No. 130,823

Int. Cl. C07d *27/68*

U.S. Cl. 260—315 **3 Claims**

Substituted aminomethylcarbazoles effective in the prevention and treatment of coccidiosis.

3,769,299

2-METHYL-3-AMINOALKYL-3-PHENYL-INDOLINES

Claus-Adolf Landgraf, Ernst Seeger, Wolfhard Engel, Helmut Teufel, and Hans Machleidt, Biberach (Riss), Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

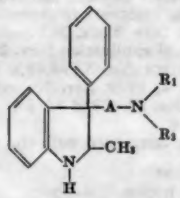
No Drawing. Continuation-in-part of abandoned application Ser. No. 846,291, July 30, 1969. This application Dec. 15, 1971, Ser. No. 208,473

Claims priority, application Germany, July 31, 1968, P 17 95 034.4; June 20, 1969, P 19 31 477.3

Int. Cl. C07d *27/38*

U.S. Cl. 260—326.11 **5 Claims**

Basic-substituted indolines of general Formula I,



(I)

wherein R_1 and R_2 may be identical to or different from each other, are each alkyl of 1 to 5 carbon atoms and A is bivalent aliphatic hydrocarbyl of 2 to 3 carbon atoms, wherein the phenyl substituent in the 3-position and the methyl group in the 2-position are in cis- configuration with respect to each other; optically dextro-rotatory isomers theerof; and non-toxic, pharmacologically acceptable acid addition salts of said basic-substituted indolines and of said optically active isomers. All of these compounds are useful as analgesics and antitussives in warm-blooded animals.

3,769,300

1,3,2-OXAZABORINIDES AND METHOD FOR PREPARING THE SAME

Thurairajah Padmanathan, Highland Park, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application May 27, 1968, Ser. No. 732,045, now Patent No. 3,621,023. Divided and this application Apr. 19, 1971, Ser. No. 135,386

Int. Cl. C07d *27/44*

U.S. Cl. 260—326.21 **3 Claims**

Condensed difluoro or diacetoxy 1,3,2-oxazaborinides are prepared by treating (a) a condensation product of a naphthostyril with an active ketomethylene compound, such as barbituric acid or its N,N-dialkyl derivatives, an indandione, an oxindole or a pyrazolone, (b) a condensation product of an o-hydroxybenzaldehyde with an aromatic amine, or (c) an ortho-(benz-azol-2yl)-naphthol or phenol, the azole being oxazole, thiazole or imidazole, with either (1) boron trifluoride dissolved in ether, or (2) orthoboric acid, benzeneboronic acid or esters thereof, in acetic acid in the presence of acetic anhydride, at reflux. The difluoro and diacetoxy-1,3,2-oxazaborinides are characterized by affinity for polyesters when applied by disperse dyeing methods and fluoresce on the fiber. Similar effects are obtained on nylon and acetate and to some extent on modified polyacrylonitrile.

3,769,301

HERBICIDAL-N-(ACYL-TERTIARY-AMIDOALKYL)ANILIDES

John F. Olin, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 1, 1971, Ser. No. 148,892

Int. Cl. C07d *27/08*

U.S. Cl. 260—326.45 **6 Claims**

Herbicidal N - (acyl-tertiary-amidoalkyl)-2-halo-substituted acetanilides.

3,769,302

ALIPHATIC AMINO-SUBSTITUTED FLOURANS

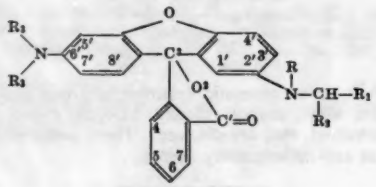
Troy E. Hoover, 2108 Westlawn Drive, Kettering, Ohio 45440, and Arthur J. Wright, 3279 Jessup Road, Cincinnati, Ohio 45239

Filed Jan. 21, 1969, Ser. No. 792,324

Int. Cl. C07d *7/42*

U.S. Cl. 260—335 **7 Claims**

A chromogenic material of normally colorless form is disclosed, having a structural formula:



wherein , R_1 and R_3 represent hydrogen radicals and alkyl radicals; and R_2 represents ester, acyl, alkylene and phenyl radicals; said materials assuming a colored form upon reactive contact with a Lewis acid molecule. Examples include

2'-[(carbo-tert-butoxy)methylamino]-6'-diethylaminofluoran;
2'-[N-(carbethoxymethyl)-N-methylamino]-6'-diethylaminofluoran;
2'-allylamino-6'-diethylaminofluoran;
6'-diethylamino-2'-[N-(N',N'-dimethylcarbamoylmethyl)amino]fluoran;
6'-diethylamino-2'-(N-phenacyl)aminofluoran;
2'-[(carbomethoxy)methylamino]-6'-diethylaminofluoran and
2'-[N-(α-carbethoxyethyl)amino]-6'-diethylaminofluoran.

3,769,303

CYCLIC ACETALS OF 2,4-HEXADIENAL

William M. Easter, Jr., Hasbrouck Heights, and Robert F. Tavares, Cedar Grove, N.J., assignors to Givaudan Corporation, Clifton, N.J.

No Drawing. Filed July 7, 1971, Ser. No. 160,554

Int. Cl. C07d *17/00*

U.S. Cl. 260—338 **1 Claim**

There are provided novel odorant compositions derived from the condensation of 2,4-hexadienal with certain

diols. These novel acetals have a generally fruity citrus type odor.

3,769,304

PREPARATION OF DIANHYDRIDES FROM MALEIC ANHYDRIDE AND A VINYL BENZENE

Gerald M. Saluti, Fairfield, and John Christos Petropoulos, Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing Filed June 1, 1971, Ser. No. 149,059
Int. Cl. C07c *61/28*
U.S. Cl. 260—346.6 10 Claims

A process is provided for the preparation of certain dianhydrides by bringing into reactive combination in the presence of a polymerization inhibitor, maleic anhydride and a vinyl benzene, such as styrene or ring-substituted lower-alkyl styrene under a non-flammable atmosphere comprising a major amount of inert gases, such as nitrogen or carbon dioxide or mixtures of the same, and a minor amount of oxygen at a temperature ranging from about 30° C. to about 150° C. The process may be conducted in a batchwise or continuous manner.

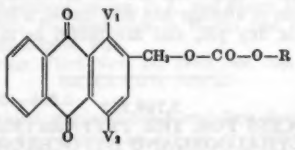
3,769,305

DISPERSIBLE ANTHRAQUINONE DYESTUFFS

Hans-Peter Kölliker, Munchenstein, Alfred Staub, Binningen, and Peter Hindermann, Bottmingen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 24,810, Apr. 1, 1970, now Patent No. 3,689,510. This application Jan. 21, 1972, Ser. No. 219,850
Claims priority, application Switzerland, Apr. 2, 1969, 5,026/69
Int. Cl. C09b *1/32, 1/50*
U.S. Cl. 260—376 3 Claims

Difficultly water-soluble anthraquinone dyestuffs free from water-solubilizing groups which dissociate acid of the formula



wherein V_1 is hydroxy or —NH_2, V_2 is hydroxy, phenylamino or substituted phenylamino, R is lower alkyl, phenyl or substituted phenyl; these dyestuffs being suited particularly for the dyeing of synthetic organic fibers, especially polyethylene glycol terephthalate fibers, affording dyeings on these fibers which have good fastness properties and especially good fastness to light and sublimation.

3,769,306

PROCESS FOR PREPARING 3-OXYGENATED-ESTRA - 1,3,5(10),8,14 - PENTAENE-17-ONE COMPOUNDS

Chan Hwa Kuo, South Plainfield, David Taub, Metuchen, and Norman L. Wendler, Summit, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation of application Ser. No. 502,523, Oct. 22, 1965, which is a continuation-in-part of application Ser. No. 455,992, May 14, 1965, both now abandoned. This application Mar. 16, 1970, Ser. No. 24,434
Int. Cl. C07c *169/52*
U.S. Cl. 260—397.1 8 Claims

The invention disclosed herein relates generally to a novel method for the preparation of intermediate compounds useful in preparing steroid compounds of the estrane series which have utility as intermediates in the preparation of 3-hydroxy or substituted oxy-gona- or D-homogona-1,3,5(10)-trien-17-one or 17a-one steroids which may have a lower alkyl substituent on the 13-carbon atom. These compounds are prepared for example by condensing carbalkoxy - 2 - alkyl - cyclopentane-1,3-dione with 1-vinyl-1-methoxy-6-hydroxy-1,2,3,4-tetrahydronaphthalene to form 3-methoxy-8,14-secogona-1,3,5(10),9-(11)-tetraene-14,17-dione, which is then converted by reaction with acid to 3-methoxy-15-carbalkoxy-13-alkyl-1,3,5(10),8,14-pentaene-17-one; hydrogenation followed by basic saponification of the ester at C-15 and decarboxylation of the resulting 15-carboxylic acid by heating with acid produces the corresponding 3-methoxy-3-alkyl-1,3,5-(10)-triene-17-one such as estrone methyl ether. The latter compounds are physiologically active substances possessing estrogenic activity, and also have utility as intermediates for the total synthesis of 19-nor steroids.

3,769,307

FLUOROAMIDE-AMINO POLYMERS AND PROCESS FOR IMPARTING OLEOPHOBIC YET HYDROPHILIC PROPERTIES TO FIBROUS MATERIALS

Jerry P. Moreau, New Orleans, and George L. Drake, Jr., and Wilson A. Reeves, Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Apr. 18, 1968, Ser. No. 722,211, now Patent No. 3,567,500, dated Mar. 2, 1971. Divided and this application Sept. 18, 1970, Ser. No. 73,630
Int. Cl. C09f *7/00*
U.S. Cl. 260—404.5 2 Claims

Certain neat liquid perfluoroalkyl esters were reacted with certain neat liquid polyamines containing a primary: secondary:tertiary amine ratio of 1:2:1 to produce new liquid polymeric fluoroamido-amino compounds. The new compounds were dissolved in certain solvents and applied to cotton fabrics thereby imparting to the treated fabrics oleophobicity with retained hydrophilicity which was durable to repeated laundering.

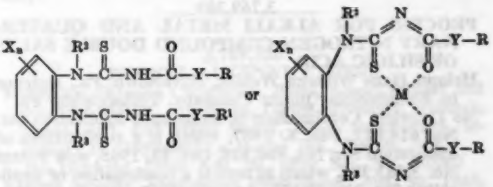
3,769,308

METAL SALTS OF BIS-THIOUREIDO-BENZENES

Keisuke Kohmoto, 184–2 Bogaki, Tottori, Japan, and Koshin Miyazaki, 3–25–8 Ohgimachi, Odawara, Japan

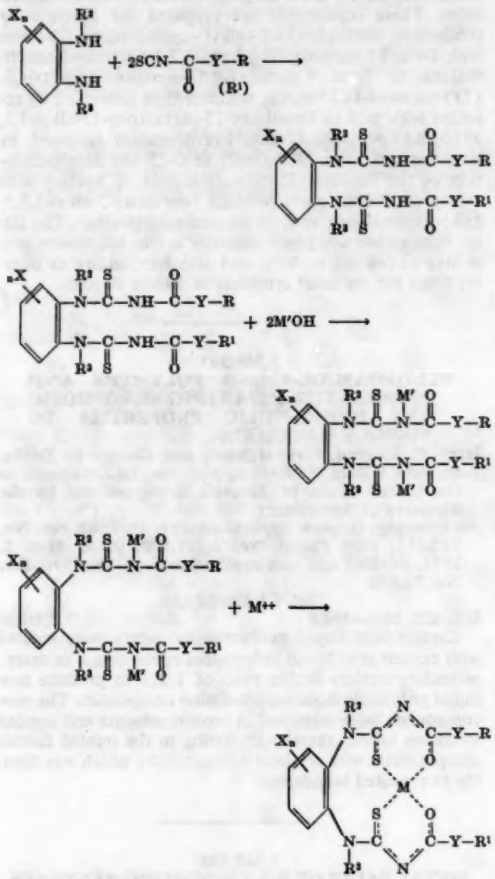
No Drawing. Continuation-in-part of application Ser. No. 771,269, Oct. 28, 1968. This application Mar. 25, 1971, Ser. No. 128,147
Int. Cl. C07f *1/08*
U.S. Cl. 260—438.1 7 Claims

The compounds having either formula



(wherein each of R and R^1 represents alkyl of 1 to 12 carbon atoms, alkyl of 1 to 2 carbon atoms substituted with halogen, methoxy or phenyl, alkenyl having 2 to 3 carbon atoms, alkynyl having 2 to 3 carbon atoms, aryl or aryl substituted with halogen, nitro or methyl; each of R^2 and R^3 represents hydrogen or methyl; X represents halogen, nitro or methyl; *n* represents integer of 0–3; Y

represents oxygen or sulfur and M represents metal) are prepared in accordance with the following equations:



wherein M′ represents alkali metal atom and the novel compounds have broad fungicidal activity with very low mammalian toxicity.

3,769,309

PROCESS FOR ALKALI METAL AND QUATERNARY NITROGEN COMPOUND DOUBLE SALTS OF SILICIC ACID

Helmut Hans Wilhelm Weldes, Havertown, Pa., assignor to Philadelphia Quartz Company, Philadelphia, Pa.

No Drawing. Continuation of abandoned application Ser. No. 614,027, Feb. 6, 1967, which is a continuation of application Ser. No. 500,328, Oct. 21, 1965, now Patent No. 3,383,386, which in turn is a continuation of application Ser. No. 50,877, Aug. 22, 1969, now Patent No. 3,239,549. This application Nov. 15, 1968, Ser. No. 776,242

Int. Cl. C07f 7/10

U.S. Cl. 260—448.2 N **10 Claims**

Double silicate salts of alkali metals and quaternary nitrogen compounds are prepared by the reaction of (a) an alkylene oxide, (b) an amine, and (c) an alkali metal silicate.

3,769,310

REDISTRIBUTION OF ALKYLHYDROSILANES

Armando G. Viego and Harry R. McEntee, Waterford, N.Y., assignors to General Electric Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 100,456, Dec. 21, 1970. This application June 7, 1972, Ser. No. 260,540

Int. Cl. C07f 7/08, 7/12

U.S. Cl. 260—448.2 P **12 Claims**

A process for effecting redistribution between two silanes at substantially anhydrous conditions comprising reacting a hydrocarbon-substituted hydrochlorosilane with another hydrocarbon-substituted chlorosilane at a temperature above 30° C. and in the presence of a catalyst which may be aluminum chloride, wherein one of the silanes contains at least one chlorine atom, and wherein the hydrosilane is present at a concentration that is above 10 mole percent and preferably above 15 mole percent based on the two silane reactants.

3,769,311

ETHOXYLATED CARBOXY CONTAINING QUATERNARY AMMONIUM COMPOUNDS AND PROCESS FOR MANUFACTURING SAME

Leonard J. Armstrong, 144 Jefferson Ave., Janesville, Wis. 53545, and Eldon De Vere Dawald, 1250 Partridge Ave., Beloit, Wis. 53511

No Drawing. Continuation-in-part of application Ser. No. 661,200, Aug. 17, 1967, which is a continuation-in-part of application Ser. No. 368,341, May 18, 1964, both now abandoned. This application Dec. 18, 1970, Ser. No. 99,669

Int. Cl. C07c 141/04

U.S. Cl. 260—459 **7 Claims**

The compounds are of the class of quaternary ammonium salts containing one or two

$$-(C_2H_4O)_{n-1}-(C_2H_4O)-CH_2CH_2COOM$$

groups on the quaternary nitrogen atom, wherein M is hydrogen or an alkali metal cation and *n* is an integer from 1 to 15. Such compounds are characterized by complete amphoterism in alkaline and acid media, a high degree of solubility at any pH, and are useful as surface active agents.

3,769,312

PROCESS FOR THE PREPARATION OF POLYHALOORGANO HYPOCHLORITES

Douglas Eugene Gould, Boonton, Lowell Ray Anderson, Parsippany, and William Burke Fox, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed June 5, 1968, Ser. No. 734,515

Int. Cl. C07c 71/00

U.S. Cl. 260—453 R **5 Claims**

Polyhaloorgano hypochlorites of the formula:

$$R-(OCl)_n$$

wherein *n* is 1 or 2, R is an open chain YZ—perhaloalkyl group when *n* is 1 and an open chain YZ—perhaloalkylene group when *n* is 2, wherein Y and Z are substituents on the R moiety and may be the same or different and selected from electronegative groups unreactive to the —OCl group or groups, with the proviso that when *n* is 2 the R group contains at least three carbon atoms and in such a case the carbon atom or atoms attached to the —OCl group or groups are each bonded to no more than two other carbon atoms; may be prepared by reacting certain compounds containing carbon-oxygen bonds with an inorganic reagent containing a chlorine atom in a plus 1 oxidation state which chlorine atom is attached to a more electronegative element. These novel polyhaloorgano hypochlorites are useful as polymerization initiators and are valuable intermediates for the synthesis of other useful compounds.

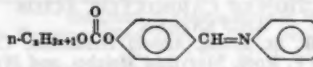
3,769,313

N - (p-n-ALKOXYCARBONYLOXYBENZYLIDENE)-p'-AMINOPHENYLACETATE LIQUID CRYSTAL COMPOUNDS

Heinz J. Dietrich and Edward L. Steiger, Toledo, Ohio, assignors to Owens-Illinois, Inc.

No Drawing. Filed June 30, 1971, Ser. No. 158,553
Int. Cl. C07c *119/10*; G02f *1/16*
U.S. Cl. 260—463 3 Claims

There is disclosed the preparation of liquid-crystal compounds of the structure:



where x is an integer of 1 to 10. The compounds are prepared by the reaction of para-acetoxyaniline and para-n-alkoxycarbonyloxybenzaldehyde.

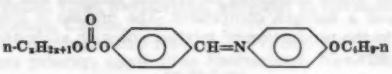
3,769,314

N - (p-n-ALKOXYCARBONYLOXYBENZYLIDENE)-p'-n-BUTOXYANILINE LIQUID-CRYSTAL COMPOUNDS

Edward L. Steiger and Heinz J. Dietrich, Toledo, Ohio, assignors to Owens-Illinois, Inc.

No Drawing. Filed July 14, 1971, Ser. No. 162,668
Int. Cl. C07c *119/10*; G02f *1/16*
U.S. Cl. 260—463 3 Claims

There is disclosed the preparation of liquid-crystal compounds of the structure:



where x is an integer of 1 to 10. The compounds are prepared by the reaction of para-n-butoxyaniline and para-n-alkoxycarbonyloxybenzaldehyde.

3,769,315

PREPARATION OF 3,3'-POLYTHIODIPROPIONIC ACIDS AND THEIR DERIVATIVES

Ronald L. Keener, Camden, N.J., and Harry R. Raterink, Drexel Hill, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,176
Int. Cl. C07c *149/20*
U.S. Cl. 260—465.8 8 Claims

3,3'-polythiodipropionic acids and their derivatives can be prepared by reacting an acrylic or methacrylic acid or derivative with sulfur, hydrogen sulfide, and an ammonium, alkali metal, or alkaline earth metal sulfide or polysulfide.

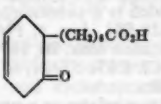
3,769,316

PROSTAGLANDIN INTERMEDIATES

Robert B. Morin, Middleton, Wis., Douglas O. Spry, Indianapolis, and Kenneth L. Hauser, Greencastle, Ind., and Richard A. Mueller, Glencoe, Ill., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Original application Dec. 16, 1968, Ser. No. 784,225. Divided and this application Oct. 8, 1971, Ser. No. 187,829
Int. Cl. C07c *61/36*
U.S. Cl. 260—468 K 3 Claims

Prostaglandins are synthesized from o-methoxyphenylacetic acid by introduction of a proper acid side chain, conversion of the aromatic nucleus to the cyclopentane nucleus, and introduction of the second side chain. Key intermediates in this synthesis are the acid having the formula:



and the esters thereof.

3,769,317

NOVEL ESTER DERIVATIVES OF PHENYLPROPANOLAMINE

Henry Cecil Caldwell, Ambler, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Feb. 23, 1971, Ser. No. 118,159
Int. Cl. C07c *103/30*
U.S. Cl. 260—471 A 4 Claims

Vinylcarbamate derivatives of phenylpropanolamine having antitussive activity. Method of preparation comprises reacting phenylpropanolamine with the appropriate acetoacetic acid ester or amide in any suitable organic solvent.

3,769,318

PROCESS FOR THE PRODUCTION OF ALLOPHANATE POLYISOCYANATES

Erwin Windemuth, Leverkusen, and Ulrich Trense, Cologne-Stammheim, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 23, 1971, Ser. No. 118,157
Claims priority, application Germany, Feb. 27, 1970, P 20 09 179.6; Aug. 17, 1970, P 20 40 645.5
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C 9 Claims

Allophanate polyisocyanates containing at least one aromatically bound —NCO group are prepared by reacting an N-substituted carbamic acid ester with organic mono- or polyisocyanates in the presence of a compound having an alkylating effect. The allophanate polyisocyanates are obtained free of secondary products having isocyanurate structures, and are especially useful as isocyanate precursors in the production of polyurethane plastics by the isocyanate-polyaddition process.

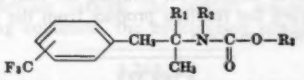
3,769,319

N-ETHYL-N-[1 - (m-TRIFLUOROMETHYLPHENYL)-PROPYL-(2)]-CARBAMIC ACID ETHYL ESTER

Karl-Heinz Boltze, Bensberg-Kippekausen, and Dietrich Lorenz, Klein Hurden, Post Immekeppel, near Bensberg, Germany, assignors to Troponwerke Dinklage & Co., Cologne, Germany

No Drawing. Filed June 4, 1971, Ser. No. 150,169
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C 1 Claim

Appetite-inhibiting substituted N-(trifluoromethylphenylethyl)-carbamic acid esters having the general formula



(I)

wherein R_1 and R_2 are hydrogen or lower alkyl with the proviso that when R_1 is hydrogen, R_2 is alkyl and R_3 is alkyl.

3,769,320

PHENYL ALKENYL ETHERS

Madhukar Subraya Chodnekar, Basel, Albert Pfiffner and Norbert Rigassi, Arlesheim, Ulrich Schwieter, Reinach, Basel-Land, and Milos Suchy, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,297
Claims priority, application Switzerland, Apr. 30, 1969, 6,597/69
Int. Cl. C07c *69/78*
U.S. Cl. 260—473 R 12 Claims

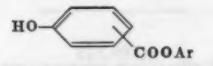
Phenyl alkenyl ethers wherein the alkenyl group contains a carbon chain of 8 or 9 carbon atoms and the terminal unsaturated double bond can be epoxidized or episulfidized, which are useful in upsetting the hormone balance of pests such as insects.

3,769,321
PROCESS FOR PREPARING ARYL HYDROXYBENZOATE

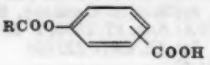
Toshio Kato, Omiya, and Kenji Yoshimura, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Dec. 17, 1971, Ser. No. 209,432
Claims priority, application Japan, Dec. 17, 1970, 45/112,492; Oct. 18, 1971, 46/81,570
Int. Cl. C07c *69/88*
U.S. Cl. 260—473 S **7 Claims**

Aryl hydroxybenzate represented by the formula,



wherein Ar is an unsubstituted or substituted aryl radical, is prepared by reacting an acyloxybenzoic acid represented by the formula,



wherein R is an alkyl group having 1 to 5 carbon atoms, with a hydroxyaryl compound represented by the formula, Ar—OH, in the presence of an esterification catalyst at a temperature of 100°–260° C.

3,769,322
CONTINUOUS PROCESS FOR PRODUCTION OF BIS (β-HYDROXYETHYL)-TEREPHTHALATE

Kisaburo Yamagami, Kichiji Enoki, and Toshiyuki Tani, Takaoka, Shiro Akimoto, Tonami, and Jiro Futakuchi and Hajimo Tayagaki, Takaoka, Japan, assignors to Nippon Soda Kabushiki Kaisha, Tokyo-to, Japan

Continuation of abandoned application Ser. No. 693,930, Dec. 27, 1967. This application Jan. 29, 1971, Ser. No. 111,129
Claims priority, application Japan, Dec. 30, 1966, 42/85,805; Jan. 21, 1967, 42/3,868; Mar. 17, 1967, 42/16,389
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 P **8 Claims**

A continuous process for the production of bis(β-hydroxyethyl)-terephthalate comprising reacting a substantially solvent-free mixture consisting of terephthalic acid and ethylene oxide in a reactor constructed with a cylindrical double shell and having a rotor provided with an agitator and/or scrapers for scraping the heat exchanger, and recovering the reaction product from the reactor in powder or solution form.

3,769,323
PROCESS FOR REFINING BIS-(BETA-HYDROXYETHYL)TEREPHTHALATE

Yataro Ichikawa, Michiyuki Tokashiki, and Nobuo Suzuki, Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Continuation-in-part of application Ser. No. 786,638, Dec. 24, 1968. This application Oct. 20, 1971, Ser. No. 191,037
Claims priority, application Japan, Dec. 28, 1967, 43/84,120
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 PR **7 Claims**

A process for the extractive purification of crude bis-(beta-hydroxyethyl)terephthalate prepared by the reaction of terephthalic acid with ethylene oxide, which comprises contacting such crude bis-(beta-hydroxyethyl) terephthalate with at least one liquid medium, which is selected from the group consisting of beta-methylnaphthalene, biphenyl beta-chloronaphthalene, carbon tetrachloride, 1,1,1-trichloroethane, tetrachloroethylene and trichloroethylene, at a temperature of 90–170° C., in such a manner that two separate phases are formed, one being a solution phase in which bis(beta-hydroxyethyl)terephthalate is dissolved in the liquid medium and the other being a melt phase which consists mainly of bis-(beta-hydroxyethyl)terephthalate and impurities contained in the starting crude bis-(beta-hydroxyethyl)terephthalate; separating the melt phase from the solution phase; and recovering refined bis-(beta-hydroxyethyl)terephthalate from the solution phase.

3,769,324
PRODUCTION OF CARBOXYLIC ACIDS AND ESTERS

Frank E. Paulik, St. Louis, Arnold Hershman, Creve Coeur, James F. Roth, Maryland Heights, and Walter R. Knox, Town and Country, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation of application Ser. No. 2,374, Jan. 12, 1970, which is a continuation-in-part of applications Ser. No. 628,578 and Ser. No. 628,591, both Apr. 5, 1967, all now abandoned. This application June 15, 1972, Ser. No. 263,330
Int. Cl. C07c *51/14, 67/00*
U.S. Cl. 260—476 R **19 Claims**

The present invention relates to a process for the preparation of aromatic carboxylic acids and esters, specifically by the reaction of aromatic alcohols and the ester, ether and halide derivatives thereof and carbon monoxide in the presence of catalyst systems containing as active constituents a metal component in which the metal is selected from the group consisting of iridium, osmium and ruthenium and a halogen component. The process is also directed to the production of mixtures of such acids and/or their esters.

3,769,325
OXIDATION OF ALPHA ARYL ALCOHOLS

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Dec. 10, 1970, Ser. No. 97,033
Int. Cl. C07c *45/16, 69/76, 67/00*
U.S. Cl. 260—476 R **21 Claims**

A method for the oxidation of alpha aryl alcohols or ethers thereof to carbonyls, i.e., aldehydes, ketones or esters, is disclosed. The reaction comprises oxidation of the alpha aryl alcohol or ether under mild conditions comprising a temperature of about 30° to 300° C. and a pressure from 1 to about 500 atmospheres, sufficient to maintain a liquid phase reaction system. The product is produced by self-oxidation of the alpha aryl oxy reactant or by oxidation in the presence of an olefin. The catalyst for this reaction is a Group VIII noble metal which is complexed with a biphyllic ligand, typically palladium or ruthenium complexed with triphenylphosphine. Reaction in the presence of a strong acid or base will produce an ester of an aromatic acid and carbinol. Side reactions such as decarbonylation can be suppressed by performing the reaction in the presence of carbon monoxide or an alkali metal hydroxide. Dehydration of the alcohol can also be reduced by the presence of an alkali metal hydroxide in the reaction medium.

3,769,326
PRODUCTION OF CARBOXYLIC ACIDS AND ESTERS

Frank E. Paulik and Arnold Hershman, Creve Coeur, James F. Roth, St. Louis, and Walter R. Knox, Town and Country, Mo., assignors to Monsanto Company, St. Louis, Mo.

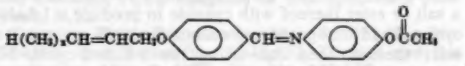
No Drawing. Continuation of application Ser. No. 2,377, Jan. 12, 1970, which is a continuation-in-part of application Ser. No. 628,581, Apr. 5, 1967, both now abandoned. This application Mar. 26, 1971, Ser. No. 128,519
Int. Cl. C07c *51/14, 67/00*
U.S. Cl. 260—476 R **18 Claims**

The present invention relates to a process for the preparation of aromatic carboxylic acids and esters, specifically

by the reaction of aromatic alcohols and the ester, ether and halide derivatives thereof with carbon monoxide in the presence of catalyst systems containing as active constituents a rhodium component and a halogen component. The process is also directed to the production of mixtures of such acids and/or their esters.

3,769,327
N-(p-ALKENYLOXYBENZYLIDENE)-p-AMINOPHENYLACETATES
Heinz J. Dietrich and Edward L. Steiger, Toledo, Ohio, assignors to Owens-Illinois, Inc.
No Drawing. Filed June 4, 1971, Ser. No. 150,218
Int. Cl. C07c *92/26*
U.S. Cl. 260—479 R **3 Claims**

There is disclosed the preparation of liquid-crystal compounds of the structure:



where x is an integer of 0 to 10. The compounds are prepared by the reaction of para-acetoxyaniline and para-n-alkenyloxybenzaldehyde.

3,769,328
8-MERCAPTO-p-MENTHAN-3-OL AND ESTER DERIVATIVES
Dietmar Lamparsky, Wangen-Dubendorf, and Peter Schudel, Grut, Switzerland, assignors to Givaudan Corporation, Clifton, N.J.
No Drawing. Filed Nov. 8, 1971, Ser. No. 201,591
Claims priority, application Switzerland, Nov. 20, 1970, 17,215/70
Int. Cl. C01c *149/26*
U.S. Cl. 260—486 R **8 Claims**

There are disclosed novel p-menthane derivatives, more particularly, 8-mercapto-p-menthan-3-ol and O-acyl derivatives thereof, a process for the manufacture thereof and odorant and/or flavouring compositions containing same.

3,769,329
PRODUCTION OF CARBOXYLIC ACIDS AND ESTERS
Frank E. Paulik and Arnold Hershman, Creve Coeur, Walter R. Knox, Town and Country, and James F. Roth, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
Continuation-in-part of abandoned application Ser. No. 628,581, Apr. 5, 1967. This application Mar. 12, 1970, Ser. No. 2,413
Int. Cl. C07c *51/12, 67/00*
U.S. Cl. 260—488 K **20 Claims**

The present invention relates to a process for the preparation of carboxylic acids and esters, specifically by the reaction of alcohols or the ester, ether and halide derivatives thereof, with carbon monoxide in the presence of catalyst systems containing as active constituents a rhodium component and a halogen component. The process is also directed to the production of mixtures of organic acids and/or organic esters.

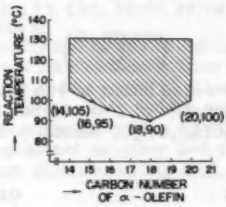
3,769,330
2-BUTYL-1-ALKYNYL-CYCLOALKAN-1-OLS AND DERIVATIVES THEREOF
Edward J. Nikawitz, Glen Rock, Robert F. Tavares, Cedar Grove, and William M. Easter, Jr., Hasbrouck Heights, N.J., assignors to Givaudan Corporation, Clifton, N.J.
No Drawing. Filed Nov. 10, 1970, Ser. No. 88,494
Int. Cl. C07c *35/06, 35/08, 35/20*
U.S. Cl. 260—488 R **12 Claims**

2-butyl - 1 - alkynyl-cycloalkan-1-ols and their alkanoyl and hydrogenated derivatives, especially the cyclopentanol, cyclohexanol and cycloheptanol members of this group possess a strong, woody odor of the ambergris type. Their odorant qualities are especially valuable in perfumery. The positional isomers and homologous compounds with a different number of carbon atoms in the alkyl side chain do not possess this quality.

3,769,331
PROCESS FOR THE PREPARATION OF ACETATES OF 1,3-PROPANEDIOL
Herbert Kuckertz, Frankfurt am Main, Hans-Jurgen Arpe, Fischbach, Taunus, and Lothar Schulz, Bad Soden, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Nov. 19, 1971, Ser. No. 200,596
Claims priority, application Germany, Nov. 21, 1970, P 20 57 399.3
Int. Cl. C07c *67/00*
U.S. Cl. 260—491 **6 Claims**

Acetates of 1,3-propanediol are prepared by catalytic hydrogenation of O-acetoxy-propionaldehyde in acetic solution.

3,769,332
METHOD FOR PREPARING OLEFIN SULFONATES
Masuzo Nagayama and Hiroshi Okada, Tokyo, Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan
Filed May 23, 1969, Ser. No. 827,232
Claims priority, application Japan, May 25, 1968, 43/35,339; Sept. 7, 1968, 43/64,448
Int. Cl. C07c *143/10, 143/16*
U.S. Cl. 260—513 R **3 Claims**



A method for preparing a detergent composition consisting essentially of alkenesulfonates containing Δ'-alkenesulfonates in an amount not exceeding 8% by weight of the total weight of alkenesulfonates by (1) contacting α-olefins in the form of a thin film with sulfur trioxide, (2) neutralizing and (3) hydrolysing the resultant alkenesulfonates, in which method the improvement comprises varying the contact temperature, the neutralizing condition, the hydrolyzing condition, etc.

3,769,333
L-ASPARTIC ACID DERIVATIVES
Milton Lapidus, Rosemont, and Marian M. McGettigan, Bryn Mawr, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Original application Oct. 16, 1970, Ser. No. 81,533. Divided and this application Aug. 7, 1972, Ser. No. 278,515
Int. Cl. C07c *103/32*
U.S. Cl. 260—518 A **2 Claims**

Disclosed herein are derivatives of L-aspartic acid which have utility as artificial sweetener agents. Also disclosed is a method for producing such derivatives.

3,769,334
DERIVATIVES OF AMINO DIALKANOIC ACIDS
Aldo Garzia, Lodi, Italy, assignors to Instituto Chemioterapico Italiano S.p.A., Milan, Italy
No Drawing. Filed June 26, 1970, Ser. No. 50,326
Int. Cl. C07c *103/30*
U.S. Cl. 260—519 **8 Claims**

(3,4,5-trialkoxybenzoyl) amino dialkanoic acids and their pharmaceutically-acceptable salts for prophylaxis and treatment of cardiac disorders.

3,769,335

DERIVATIVES OF AMINOALKANOIC ACIDS

Aldo Garzia, Lodi, Italy, assignor to Instituto Chemioterapico Italiano S.p.A., Milan, Italy

No Drawing. Filed June 26, 1970, Ser. No. 50,328
Int. Cl. C07c *103/32*
U.S. Cl. 260—519 4 Claims

(3,4,5-dialkoxy-monohydroxy benzoyl) amino alkanoic acids and their pharmaceutically-acceptable salts for prophylaxis and treatment of cardiac disorders.

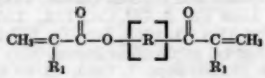
3,769,336

POLYETHYLENE GLYCOL DIACRYLATE

Henry L. Lee, Jr., San Marino, and Donald G. Stoffey, Hacienda Heights, Calif., assignors to Lee Pharmaceuticals, South El Monte, Calif.

No Drawing. Original application May 24, 1971, Ser. No. 146,467, now Patent No. 3,751,399. Divided and this application Feb. 12, 1973, Ser. No. 331,555
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R 2 Claims

Compositions of aromatic and alicyclic polyacrylate compounds comprising from 25% to 90% by weight of a polyacrylate of the formula:

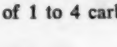


wherein

R_1 is hydrogen or alkyl of 1 to 4 carbons; and

R is:

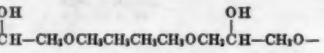
(a)



wherein x is an integer of 1 to 5, and R_2 is hydrogen or an alkyl of 1 to 4 carbon atoms;

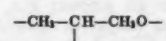
(b) $CH_2(CH_2)_yCH_2O$, wherein y is an integer of 1 or 2;

(c)

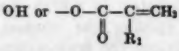


or

(d)



wherein R_3 is



and R_1 has the same meaning as above;

and 10 to 75% by weight of an aromatic or alicyclic polyacrylate compound are utilized in various dental restorative applications. A particularly suitable composition is one comprising BIS-GMA and triethylene glycol dimethylacrylate.

3,769,337

PROCESS FOR THE PREPARATION OF CITRIC ACID

Karl E. Wiegand, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Aug. 18, 1971, Ser. No. 172,627
Int. Cl. C07c *59/16*
U.S. Cl. 260—535 P 28 Claims

It is disclosed that citric acid or its salts are obtained by the hydrolysis of a 3-carbamoyl-3-hydroxy-4-cyanobutyric acid or salt, that a 3-carbamoyl-3-hydroxy-4-cyanobutyric acid or salt is obtained from a 3-carbamoyl-3,4-epoxybutyric acid or salt, that a 3-carbamoyl-3,4-epoxybutyric acid or salt is obtained from a 3-carbamoyl-3-hydroxy-4-halobutyric acid or salt, that a 3-carbamoyl-3-hydroxy-4-halobutyric acid is obtained from a 3-cyano-3-hydroxy-4-halobutyric acid or salt, that a 3-cyano-3-hydroxy-4-halobutyric acid or salt is obtained from a 3-oxo-4-halobutyric acid or salt, that a 3-oxo-4-halobutyric acid or salt is obtained from a 3-oxo-4-halobutyryl halide, and that a 3-oxo-4-halobutyryl halide is obtained from diketene. Preferred halide compounds are compounds of chlorine.

3,769,338

PROCESS FOR SYNTHESIZING CITRIC ACID

Michael J. Dagani and Tillmon H. Pearson, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

No Drawing. Continuation-in-part of application Ser. No. 145,035, May 19, 1971. This application Nov. 9, 1971, Ser. No. 197,132
Int. Cl. C07c *59/16*
U.S. Cl. 260—535 P 27 Claims

It is disclosed that citric acid and its salts are produced by reacting a 1-halo-2-oxo-propane-3-carboxylic acid or a salt or ester thereof with cyanide to produce a 1-halo-2-cyano-2-hydroxy-propane-3-carboxylic acid or a salt or ester thereof, then converting the 1-halo-2-cyano-2-hydroxy-propane-3-carboxylic acid, its ester or salt to a 1-halo-2-hydroxy-propane-2,3-dicarboxylic acid or its ester or salt, then converting the 1-halo-2-hydroxy-propane-2,3-dicarboxylic acid or its ester or salt to a propane-1,2-epoxide-2,3-dicarboxylic acid or its ester or salt, then converting the propane-1,2-epoxide-2,3-dicarboxylic acid or its ester or salt to a 1-cyano-2-hydroxy-propane-2,3-dicarboxylic acid or its ester or salt, then converting the 1-cyano-2-hydroxy-propane-2,3-dicarboxylic acid, ester or salt to citric acid or a salt or ester thereof. Overall yields of citrate from diketene are 60 percent or higher.

3,769,339

PROCESS FOR THE PRODUCTION OF CALCIUM TARTRATE

Hans Wagner and Fritz Schäfer, Constance, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Continuation of abandoned application Ser. No. 765,680, Oct. 7, 1968. This application June 30, 1971, Ser. No. 158,551
Int. Cl. C07c *59/14*
U.S. Cl. 260—536 2 Claims

Calcium tartrate is produced by heating acid calcium maleate in the presence of hydrogen peroxide and the substantially complete absence of iron ions using as catalysts tungstic or molybdic acids or the ammonium or alkali metal salts thereof to yield an oxidation product that is hydrolyzed to calcium tartrate.

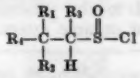
3,769,340

SULFINYL CHLORIDES

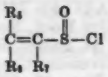
Paul C. Aichenegg, Prairie Village, Kans., and Larry M. Bain, Independence, Mo., assignors to Chemagro Corporation, New York, N.Y.

No Drawing. Filed Oct. 4, 1966, Ser. No. 584,104
Int. Cl. C07c *145/00*
U.S. Cl. 260—543 R 7 Claims

Compounds of the Formula 1



or the Formula 2



in which at least 3 of the R_1, R_2, R_3 and R_4 are halogen of atomic weight 35 to 80 and the remaining number of R_1, R_2, R_3 and R_4 is such a halogen or is hydrogen and at least two of R_5, R_6 and R_7 are halogen of atomic weight 35 to 80 and the remaining number of R_5, R_6 and R_7 is such a halogen or is hyrdogen. A process for preparing the compounds is also disclosed.

3,769,341

2-(1-NAPHTHYL CARBAMOYL-1,1,1-TRIALKYLHYDRAZINIUM SALTS AND HERBICIDAL USE THEREOF

Gerhard H. Alt, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,383
Int. Cl. C07c *133/08*
U.S. Cl. 260—554 3 Claims

The 2-(1 - naphthylcarbamoyl) - 1,1,1 - trialkylhydrazinium inner salts have been found to be active preemergent herbicides. These compounds are especially active against Canadian thistle and field bindweed.

3,769,342

DIALKOXY PHENYLENE BIS-SULFONAMIDES

Zaven S. Ariyan, Woodbury, Conn., and Robert L. Martin, Endicott, N.Y., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Original application Mar. 6, 1971, Ser. No. 804,998, now Patent No. 3,621,032. Divided and this application Mar. 8, 1971, Ser. No. 122,157
Int. Cl. C07c *143/80*
U.S. Cl. 260—556 S 4 Claims

Dialkoxy phenylene bis-sulfonamides having utility as foliage fungicides.

3,769,343

p,p'-OXYBIS(BENZENESULFONAMIDE) MONOHYDRATE

Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.

No Drawing. Filed Nov. 5, 1971, Ser. No. 196,228
Int. Cl. C07c *43/78*
U.S. Cl. 260—556 AR 1 Claim

p,p'-Oxybis(benzensulfonamide) monohydrate is a novel compound which may be prepared by treating p,p'-oxybis(benzenesulfonyl chloride) with ammonium hydroxide. It is useful as an intumescent agent.

3,769,344

CARBODIIMIDES FROM OLEFINS, CYANAMIDE AND TERT-BUTYL HYPOCHLORITE

Louis de Vries, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Original application June 10, 1968, Ser. No. 735,526, now abandoned. Divided and this application Oct. 22, 1970, Ser. No. 83,198
Int. Cl. C07c *119/04*
U.S. Cl. 260—566 R 1 Claim

Cyanamide is β-chloroalkylated with from 1 to 2 chloroalkyl groups by combining cyanamide, positive chlorine and an ethylene compound under relatively mild conditions in an inert solvent. The products find use as intermediates, sources of guanidine bases, while the carbodiimide products, in addition, find use as catalysts, dehydrating agents, monomers and stabilizing agents.

3,769,345

METHOD OF PREPARING ORGANOLITHIUM AMINE COMPLEXES

Arthur W. Langer, Jr., Watchung, N.J., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 560,110, June 24, 1966, which is a continuation-in-part of application Ser. No. 505,976, Nov. 1, 1965, both now abandoned, which is a continuation-in-part of application Ser. No. 359,434, Apr. 13, 1964, now Patent No. 3,458,586, which in turn is a continuation-in-part of abandoned application Ser. No. 266,188, Mar. 19, 1963. This application Dec. 13, 1967, Ser. No. 690,076
Int. Cl. C07c *87/20, 87/34, 87/54*
U.S. Cl. 260—563 R 19 Claims

Organolithium amine complexes are prepared by admixing an organolithium, a tertiary chelating polyamine and a hydrocarbon group-containing compound having a pKa of about 40 or less. The complexes may be recovered or the reaction mixture used as is for polymerization, telomerization and Grignard-type reactions.

3,769,346

DIAMMONIUM SALTS AND PROCESS FOR PREPARATION

Jacques Robert Boissier, Paris, and Roger Robert Etienne Eugène Ratouis, Saint-Cloud, France, assignors to Societe Anonyme dite: Roussel-UCLAF, Paris, France

No Drawing. Continuation of abandoned application Ser. No. 344,247, Feb. 12, 1954. This application Sept. 4, 1968, Ser. No. 768,946
Int. Cl. C07c *87/14*
U.S. Cl. 260—567.6 P 3 Claims

New compounds, N,N'-di-(2-aryloxyethyl)-N,N,N',N'-tetramethyl-alpha,omega - polymethylene diammonium salts, useful as antimicrobial agents, and a process for the preparation thereof are disclosed.

3,769,347

PRODUCTION OF d,d'-2,2'-(ETHYLENEDIIMINO) DI-1-BUTANOL HYDROCHLORIDE

John Kazan, Bridgewater Township, Somerset County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Feb. 11, 1971, Ser. No. 114,725
Int. Cl. C07c *89/00, 89/04*
U.S. Cl. 260—584 R 4 Claims

Improved quantity and quality of d,d'-2,2'-(ethylenediimino)di-1-butanol dihydrochloride from the reaction of ethylene dichloride and an excess of d-2-amino-1-butanol are obtained by mixing finely divided sodium hydroxide with the reaction mixture, distilling off d-2-amino-1-butanol, adding isopropanol or other 2–4 carbon alkanol, separating sodium chloride, adding HCl, and separating the product.

3,769,348

NOVEL SYNTHETIC MUSK ODORANTS

Thomas F. Wood, Wayne, and Emanual Heilwell, Passaic, N.J., assignors to Givaudan Corporation, Clifton, N.J.

No Drawing. Filed Mar. 25, 1970, Ser. No. 22,664
Int. Cl. A61k *7/00;* C07c *14/76*
U.S. Cl. 260—590 3 Claims

There are provided novel tricyclic carbocyclic compounds containing a total of 20 carbon atoms which are odorants of the musk type. These compounds possess all of the desirable properties of natural musks while possessing greater tenacity. The novel compounds may be synthesized at a small fraction of the cost of the market price of the natural odorants.

3,769,349

PROCESS FOR PREPARING 2,4-DIHYDROXY-BENZOPHENONES

Masuo Yukutomi, Fuchu, Yoshitaka Tanaka, Sagamihara, and Satosi Genda and Masaki Kitaura, Tokyo, Japan, assignors to Kyodo Chemical Co., Ltd., Tokyo, Japan

No Drawing. Continuation of abandoned application Ser. No. 700,729, Jan. 26, 1968. This application June 15, 1970, Ser. No. 48,870
Claims priority, application Japan, Jan. 27, 1967, 42/4,999
Int. Cl. C07c *49/82*
U.S. Cl. 260—591 4 Claims

2,4-dihydroxybenzophenones, which are useful ultraviolet ray-absorbing agents or intermediates thereof, are prepared substantially quantitatively by reacting resorcinols with benzotrichlorides in the presence of a mixed

solvent comprising water and a water-soluble organic solvent such as a lower alcohol, lower fatty acid, or the like.

3,769,350

METHOD FOR MAKING 2,3-DIMETHYL-1,4-BIS-(3,4 - HYDROCARBONYLOXYPHENYL) - 1,4-BUTANEDIONE

Clark William Perry, Bogota, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Dec. 9, 1968, Ser. No. 782,414

Int. Cl. C07c *49/76*

U.S. Cl. 260—592 3 Claims

This invention is directed to the stereoselective synthesis of the food additive meso-nordihydroguaiaretic acid from a protected ortho dihydroxy benzene and intermediates in this synthesis.

3,769,351

PROCESS FOR PRODUCING BIS-ALPHA-METHYLBENZYL ETHER

Yoku Mukai, Ikoma-gun, Nara-ken, Japan, assignor to Kyoeisha Yushi Kagaku Kogyo Co., Ltd., Osaka, Japan

No Drawing. Filed Apr. 14, 1971, Ser. No. 134,047

Claims priority, application Japan, Apr. 20, 1970, 45/33,014

Int. Cl. C07c *41/10*

U.S. Cl. 260—611 A 5 Claims

Bis-alpha-methylbenzyl ether is produced by reacting two molecules of alpha-methylbenzyl alcohol with each other in the presence of a silicofluoride catalyst at elevated temperature.

3,769,352

PREPARATION OF UNSATURATED ALCOHOLS AND ETHERS

Michael G. Romanelli, New York, N.Y., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 808,673, Mar. 19, 1969, now Patent No. 3,670,032. This application Feb. 8, 1971, Ser. No. 113,591

The portion of the term of the patent subsequent to June 13, 1989, has been disclaimed

Int. Cl. C07c *41/06, 41/10*

U.S. Cl. 260—614 AA 8 Claims

Unsaturated alcohols and ethers are prepared through the reaction of C_4 to C_8 aliphatic conjugated diolefins with water, a lower alkanol or mixtures thereof in the presence of a zero valent palladium based catalyst system. The preferred catalyst is tetrakis(tribenzylphosphine) palladium, tetrakis(diphenylalkylphosphine)palladium or tetrakis(triphenylphosphine)palladium alone or in combination with a basic material such as a quaternary ammonium hydroxide. Where one of the coreactants is water, the reaction is conducted in the presence of a solvent. The unsaturated alcohol and ether products can be catalytically hydrogenated to plasticizer alcohols and ether solvent media.

3,769,353

PREPARATION OF PENTACHLOROPHENOL

James H. Francis, Belleville, and Linus H. Horcher, Columbia, Ill., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 694,098, Dec. 28, 1967. This application Aug. 25, 1970, Ser. No. 66,890

Int. Cl. C07c *39/36*

U.S. Cl. 260—623 H 4 Claims

The use of aluminum and copper as a catalyst in the chlorination of phenolic compounds to produce pentachlorophenol.

3,769,354

1,2-DIBROMO-1-CYCLOHEXYL-2-NITROETHANE

Clinton Joseph Peake, Medina, N.Y., assignor to FMC Corporation, New York, N.Y.

No Drawing. Filed Apr. 18, 1972, Ser. No. 245,197

Int. Cl. C07c *79/08*

U.S. Cl. 260—644 1 Claim

A new class of microbicidal compounds consisting of 1, 2-dihalo-1-cycloalkyl-2-nitroethanes exhibits microbicidal activity particularly when used in seed treatment and by soil incorporation. The synthesis of members of this class is described in detail and the utility of preferred compounds of the class is exemplified.

3,769,355

PREPARATION OF NITROCYCLOPROPANE FROM 3-CHLORO-1-NITROPROPANE

John D. Bacha and Charles M. Selwitz, Borough of Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Feb. 5, 1973, Ser. No. 329,566

Int. Cl. C07c *79/08*

U.S. Cl. 260—644 13 Claims

Nitrocyclopropane is prepared by reacting 3-chloro-1-nitropropane with a base in the presence of a polar, aprotic solvent. For example, the reaction of 3-chloro-1-nitropropane with potassium carbonate in the presence of dimethyl sulfoxide produces nitrocyclopropane in high yield.

3,769,356

PREPARATION OF NITROCYCLOPROPANE FROM NITROMETHANE AND VINYL BROMIDE

John D. Bacha and Charles M. Selwitz, Borough of Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Feb. 5, 1973, Ser. No. 329,567

Int. Cl. C07c *79/08*

U.S. Cl. 260—644 8 Claims

Nitrocyclopropane is prepared by reacting nitromethane and vinyl bromide in the presence of a base and a polar, aprotic solvent. Nitromethane and vinyl bromide react in dimethyl sulfoxide in the presence of potassium carbonate with the production of nitrocyclopropane.

3,769,357

PREPARATION OF NITROCYCLOPROPANE FROM NITROMETHANE AND A 1,2-DIHALOETHANE

John D. Bacha and Charles M. Selwitz, Borough of Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Feb. 5, 1973, Ser. No. 329,568

Int. Cl. C07c *79/08*

U.S. Cl. 260—644 10 Claims

Nitrocyclopropane is prepared by reacting nitromethane and a 1,2-dihaloethane in the presence of a base and a polar, aprotic solvent. Nitromethane and 1,2-dibromoethane react in dimethyl sulfoxide in the presence of potassium carbonate with the production of nitrocyclopropane.

3,769,358

HYDROGENATION PROCESS START-UP METHOD

Thomas E. Neta, Houston, and David W. Hill and Robert F. Wiesenborn, Alvin, Tex., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Mar. 27, 1972, Ser. No. 238,627

Int. Cl. C07c *5/10, 7/00*

U.S. Cl. 260—667 9 Claims

A start-up method for a process for the liquid phase selective non-destructive catalytic hydrogenation of α-

methylstyrene in a mixed α-methylstyrene and cumene feed wherein upon the initial charging of hydrogen and α-methylstyrene to the hydrogenation zone containing a solid hydrogenation catalyst the concentration of hydrogen in the gases in said zone is maintained at not greater than 40 mole percent and the inlet temperature of the mixed feedstream is maintained at not greater than 160° F. until the hydrogenation reaction has commenced.

3,769,359

DIMERIZATION OF STYRENE COMPOUNDS

Stephen N. Massie, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed June 7, 1972, Ser. No. 263,363

Int. Cl. C07c *3/12*

U.S. Cl. 260—669 P 10 Claims

Styrene compounds are dimerized by treating said compounds in a solution of a carboxylic acid containing a mineral acid.

3,769,360

PROCESS FOR TRANSALKYLATING DIETHYL BENZENE

Earl F. Harper, Oakmont, and Roger C. Williamson, Allison Park, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Apr. 9, 1971, Ser. No. 132,887

Int. Cl. C07c *3/62*

U.S. Cl. 260—672 T 7 Claims

Process for transalkylating diethyl benzene to ethyl benzene which involves reacting diethyl benzene and benzene in the vapor phase in the presence of a zeolitic molecular sieve catalyst.

3,769,361

OXYDEHYDRODIMERIZATION OF PROPYLENE AND ISOBUTYLENE

Hans R. Friedli, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 14, 1971, Ser. No. 153,044

Int. Cl. C07c *11/12, 5/27*

U.S. Cl. 260—673 8 Claims

Addition of chlorine, bromine, or iodine to a mixed feed stream of oxygen and propylene or isobutylene increases the conversion of olefin to oxidatively dimerized hydrocarbons at the expense of carbon oxides and causes production of a monocyclic aromatic hydrocarbon when the feed stream is passed at an elevated temperature over a manganese oxide catalyst modified with a Group I–A or II–A metal oxide.

3,769,362

OXYDEHYDROGENATION OF ETHANE

William Q. Beard, Jr., Wichita, Kans., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Original application July 14, 1969, Ser. No. 841,622, now abandoned. Divided and this application June 17, 1971, Ser. No. 154,179

The portion of the term of the patent subsequent to Feb. 22, 1989, has been disclaimed

Int. Cl. C07c *11/12*

U.S. Cl. 260—677 XA 10 Claims

An ethane to ethylene oxydehydrogenation process and catalyst therefor which is composed of a low concentration of iron chloride with rare earth halide, the ratio of rare earth halide to iron chloride being greater than 1:1. Other preferred catalyst components include alkali metal halide and manganese halide.

3,769,363

OLIGOMERIZATION OF OLEFINS WITH BORON TRIFLUORIDE

James A. Brennan, Cherry Hill, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Mar. 13, 1972, Ser. No. 234,370

Int. Cl. C07c *3/18*

U.S. Cl. 260—683.15 B 5 Claims

A process is provided for oligomerizing olefins, to obtain a fluid in which the trimer to tetramer and higher ratio is at least four, which comprises: contacting said olefins in a reaction zone with a carboxylic acid-promoted boron trifluoride catalyst, said carboxylic acid having at least 3 carbon atoms, in a mole ratio of promoter to olefins of from abut 0.005:1 to about 0.05:1 and at a temperature of from about 0° C., to about 20° C., in the presence of free boron trifluoride.

3,769,364

CARBOXYPHENYL ESTERS OF PROPENYL AND PROPADIENYLPHOSPHONIC ACIDS

Janos Kollonitsch, Westfield, and George Gal, Watchung, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application July 14, 1969, Ser. No. 841,547, now Patent No. 3,666,838, dated May 30, 1972. Divided and this application Sept. 13, 1971, Ser. No. 180,153

Int. Cl. C07f *9/08, 9/38, 9/40*

U.S. Cl. 260—941 1 Claim

Cis-1-propenyl phosphonic acid and propadienylphosphonic acid are made from propargyl alcohol and 2-halo-4-oxo-1,3-dioxa-2-phosphanaphthalene via reaction of the two, rearrangement of the resulting propargyloxy compound, reduction of the propadienylphosphonate thus formed and/or hydrolysis of the ester function. The intermediates for example, the o-carboxyphenyl ester of propadienylphosphonic acid or cis-1-propenylphosphonic acid, are novel compounds.

3,769,365

REACTION PRODUCT OF EPOXY RESINS, FATTY AMINES, DICARBOXYLIC ACIDS AND AMINOPLASTS

Rosemarie Toepfl, Basel, Heinz Abel, Reinach, and Arthur Maeder, Therwil, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed June 8, 1971, Ser. No. 151,127

Claims priority, application Switzerland, June 9, 1970, 8,621/70

Int. Cl. C08g *45/10*

U.S. Cl. 260—834 14 Claims

Stable preparations are provided containing reaction products obtained by reacting in the presence of an organic solvent (a) epoxides containing at least two epoxide groups per molecule with (b) fatty amines with 12 to 24 carbon atoms and (c) aliphatic dicarboxylic acids with at least 7 carbon atoms and optionally (c') anhydrides of aromatic dicarboxylic acids or aliphatic monocarboxylic or dicarboxylic acids, (d) an aminoplast precondensate containing alkylether groups, (e) aliphatic diols with 2 to 22 carbon atoms and (f) polyfunctional compounds containing halogen atoms, vinyl, ester, acid, nitrile hydroxyl or epoxide groups. Said reaction prod-

ucts contain free carboxyl groups and optionally ammonia or an organic base is added so that a sample of the reaction mixture—after adding some water to enable a pH-reading—has a pH-value of 7.5 to 12.

The stable preparations are useful to finishing textile materials, especially to rendering wool non-felting.

3,769,366

POLYESTERIMIDES FROM CAPROLACTAM-TRIMELLITIC ANHYDRIDE REACTION PROUCTS DISSOLVED IN UNSATURATED MONOMERS

William A. Fessler, Albany, and Henry A. Wroblewski, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Filed Apr. 13, 1972, Ser. No. 243,873

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 PA **9 Claims**

Solventless encapsulating varnishes convertible to hard glassy solids are provided. The solventless varnishes employ aliphatically unsaturated organic diluents, such as vinyl toluene, in combination with a curable polyester imide reaction product derived from trimellitic anhydride, caprolactam, a glycol, such as neopentyl glycol, and an aliphatically unsaturated dicarboxylic acid or anhydride.

3,769,367

COLOR-STABILIZED POLYCARBONATE COMPOSITION

Arnold Factor, Scotia, N.Y., assignor to General Electric Company

No Drawing. Filed June 14, 1972, Ser. No. 262,566

Int. Cl. C08g *51/62*

U.S. Cl. 260—860 **12 Claims**

A thermally stable, streak-resistant polycarbonate composition comprises an aromatic polycarbonate containing a stabilizing amount of a mixture of (a) cadmium and/or cerium benzoate and (b) an organic phosphite.

3,769,368

GRAFTED COPOLYMER WITH TWO SEQUENCES OF RECURRING UNITS AND METHODS OF PRODUCING SAME

Jean Peyrot, Le Havre, France, assignor to Compagnie Francaise de Raffinage, Paris, France

No Drawing. Filed Dec. 20, 1971, Ser. No. 210,162

Claims priority, application France, Dec. 21, 1970, 7045985

Int. Cl. C08f *15/00*

U.S. Cl. 260—877 **11 Claims**

A copolymer with two sequences of recurring units is produced by first forming a homopolymer with a benzene ring at one of its ends, then effecting chloromethylation of the benzene ring and finally effecting cationic grafting of a monomer onto the chloromethyl group of the homopolymer.

3,769,369

MIXTURES OF POLYISOPRENE RUBBER AND POLYPENTENAMER

Wilhelm Graulich, Opladen, Manfred Beck, Odenthal-Globusch, Gunter Marwede, Leverkusen, and Dieter Theisen, Remscheid, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 10, 1972, Ser. No. 252,027

Claims priority, application Germany, May 12, 1971, P 21 23 452.6

Int. Cl. C08d *9/08*

U.S. Cl. 260—887 **6 Claims**

Rubber mixtures containing

(a) 5–95% by weight of polyisoprene rubber and
(b) 95–5% by weight of trans-1,5-polypentenamer.

3,769,370

COMPOSITION OF POLYOLEFIN RUBBER, 1,2-POLYBUTADIENE AND A FLUORINATED POLYMER

Jon W. Martin, Los Alamitos, and Jeffrey L. Bell, Anaheim, Calif., assignors to TRW Inc., Redondo Beach, Calif.

No Drawing. Filed June 14, 1971, Ser. No. 153,022

Int. Cl. C08d *9/16*

U.S. Cl. 260—889 **7 Claims**

A blend of a polyolefin rubber, a low molecular weight 1,2-butadiene resin, a polyfluorinated resin and, if desired, an inert filler, such as silica, carbon black, alumina, etc., is peroxide cured to produce a vulcanized elastomer having high tensile strength and elongation properties for use in corrosive environments, such as hydrazine, oil wells, etc.

3,769,371

FLUOROCARBON POLYMER BLEND AND VULCANIZATES THEREOF

Arthur Nersasian, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 23, 1969, Ser. No. 868,921

Int. Cl. C08f *29/22*

U.S. Cl. 260—900 **2 Claims**

An elastomer comprising a blend of 2–50 parts by weight of poly(vinylidene fluoride) with 100 parts by weight of a saturated elastomeric copolymer of vinylidene fluoride and at least one other ethylenically unsaturated fluorinated monomer. These elastomeric compositions exhibit enhanced curability, and vulcanizates therefrom have improved physical properties.

3,769,372

POLYOL ESTERS OF ALKYLATED-4-HYDROXY-BENZYL PHOSPHINIC ACIDS

John D. Spivack, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation, Greenburgh, N.Y.

No Drawing. Filed May 24, 1971, Ser. No. 146,438

Int. Cl. C07f *9/02, 9/12*

U.S. Cl. 260—928 **19 Claims**

Polyol esters of alkylated-4-hydroxybenzyl phosphinic acids of this invention effectively stabilize organic materials against the effects of heat, light, and oxygen. The esters of this invention are prepared by transesterifying a phenyl alkylated-4-hydroxybenzyl phosphinate with the appropriate polyol using conventional techniques or by reacting an acid halide of an alkylated-4-hydroxybenzyl-phosphinic acid with the appropriate polyol in the presence of a tertiary amine. An example of this class of stabilizers is 2,2,4,4-tetramethyl-1,3-cyclobutanediol-bis-[(3,5-di-tert - butyl - 4 - hydroxybenzyl) benzenephosphinate].

3,769,373

POLYMERISATION OF UNSATURATED HYDROCARBONS

Hugh Wilma Boulton Reed and Alan John Wilkinson, Norton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation-in-part of abandoned application Ser. No. 703,732, Dec. 19, 1957. This application May 27, 1959, Ser. No. 816,050

Claims priority, application Great Britain, Dec. 27, 1956, 39,342/56; May 30, 1958, 17,306/58; June 16, 1958, 19,158/58

Int. Cl. C08f *3/02, 3/08*

U.S. Cl. 260—93.7 **17 Claims**

A component of an olefine polymerisation catalyst is prepared by the reaction between aluminum and titanium tetrachloride preferably under reflux conditions in

the presence of aluminum chloride. The product has the approximate empirical formula $AlTi_3Cl_{12}$ and when ball-milled forms a highly active polymerisation catalyst in combination with an organo-aluminum compound.

3,769,374

BICYCLOALKYL PHOSPHATES

Peter E. Newallis, Leawood, Kans., and Zafarullah K. Cheema, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Original application Apr. 24, 1969, Ser. No. 819,536, now Patent No. 3,636,204. Divided and this application June 8, 1971, Ser. No. 150,934

Int. Cl. C07f *9/08, 9/16;* **A01n** *9/36*

U.S. Cl. 260—943 **7 Claims**

S-(N-bicycloalkylcarboxamido) esters of phosphoro-(di)thioic acid, phosphono(di)thioic acid, and phosphino-(di)thioic acid are prepared by condensing a salt of the acid with chlorinated N-bicycloalkylcarboxamide. The compounds are useful as insecticides.

3,769,375

OXIMINO PHOSPHORUS COMPOUNDS

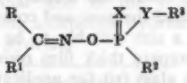
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Apr. 6, 1970, Ser. No. 26,103. Divided and this application June 12, 1972, Ser. No. 261,883

Int. Cl. C07f *9/14, 9/20;* **A01n** *9/36*

U.S. Cl. 260—944 **7 Claims**

Compounds having the formula



in which X is oxygen or sulfur; Y is oxygen or sulfur; R is alkyl; R^1 is alkyl; R^2 is alkyl or alkoxy and R^3 is (1) phenyl or (2) mono-, di- or tri-substituted phenyl wherein the substituent is (a) nitro, (b) cyano, (c) halogen, (d)

wherein R^4 is alkyl, (e) CF_3, (f) SO_2NHR_5 wherein R^5 is alkyl or (g) thiomethyl and their use as insecticides and acaricides are disclosed. Also, the intermediates for preparing the compounds and a method for preparing the intermediates are disclosed.

3,769,376

PROCESS FOR MAKING FIBER REINFORCED POLYURETHANE LAMINATES

Paul Georges Louis Arbaud, Chantilly, France, assignor to Ugine Kuhlmann, Paris, France

No Drawing. Filed Oct. 26, 1970, Ser. No. 84,158

Claims priority, application France, Oct. 30, 1969, 6937275

Int. Cl. C09j *3/16*

U.S. Cl. 156—331 **7 Claims**

Composite material comprising an outer polyurethane-based elastomer layer, an inner fibrous layer, an inner polyurethane-based elastomer layer and a fibrous layer as the other outer layer. The composite material may be prepared by applying to a non-adherent support, a liquid polycondensate containing free NCO groups and a liquid hardener or a hardener in solution in an inert solvent; then applying a layer of fibres on the layer thus obtained before total hardening; then simultaneously applying on the layer of fibres a liquid polycondensate containing free NCO groups and a liquid hardener or a hardener in solution in an inert organic solvent; then applying a second layer of fibres on the layer thus obtained before complete hardening and finally separating the material so produced from the non-adherent support.

3,769,377

DIALKYLPHOSPHORYLBICYCLO[7.2.0]ALKANES

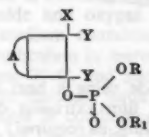
Roy C. De Selms, Rochester, N.Y., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed May 20, 1970, Ser. No. 39,168

Int. Cl. A01n *9/36;* **C07f** *9/08*

U.S. Cl. 260—958 **5 Claims**

A compound of the formula



wherein A is alkylene or alkenylene of from 3 to 10 carbon atoms; R and R_1 are alkyl radicals of 1 to 4 carbon atoms; X and Y are chlorine or bromine substituents, or the Y's may be taken together to form a bond between the carbon atoms to which they are attached. The compounds find use as insecticides, particularly as against aphids.

3,769,378

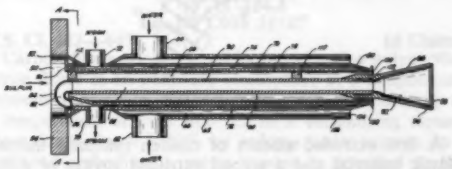
METHOD FOR THE PREPARATION OF POROUS, PARTICULATE SULFUR

Donald C. Young, Fullerton, and Bruce A. Harbolt, Northridge, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Original application July 30, 1969, Ser. No. 846,141, now Patent No. 3,637,351. Divided and this application Sept. 9, 1971, Ser. No. 178,940

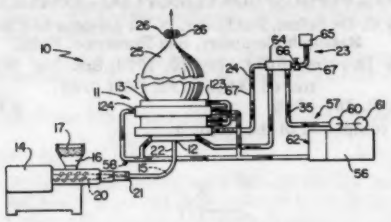
Int. Cl. B01j *2/06*

U.S. Cl. 264—11 **9 Claims**



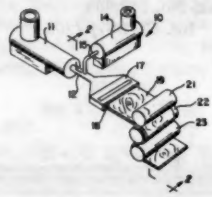
A method for preparing porous sulfur particles by discharging, into a vapor space at substantially atmospheric pressure, water and molten sulfur in intimate admixture to form sulfur droplets having a continuous sulfur phase and a contained water phase, permitting the sulfur droplets to solidify into discrete particles and the water to separate therefrom. This can be accomplished by discharging molten sulfur and water from separate conduits and into intimate admixture in the atmopshere. The sulfur is solidified into porous particles and the momentum of the combined streams is sufficient to convey the sulfur to a desired location on a storage pad. The invention is useful in conveying molten sulfur from tanks of a truck or tankcar to a storage site for further delivery to consumers.

3,769,379
APPARATUS FOR THE METHOD OF MAKING PLASTIC FILM
Donald R. Hinrichs, Waynesboro, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Mar. 22, 1971, Ser. No. 126,531
Int. Cl. B29d *23/04;* B29f *3/08*
U.S. Cl. 264—40 6 Claims



Plastic film is made using a heat transfer liquid circulated through the film extrusion die to control (by either heating or cooling, as required) the temperature of the plastic melt flowing through such die. A plastic bubble emerging at the outlet of the die is inflated and ventilated by continuously circulated gas which is controlled in temperature as it enters and leaves the bubble so that it does not adversely affect the temperature of the melt in the die.

3,769,380
METHOD FOR EXTRUDING SYNTHETIC THERMOPLASTIC SHEET MATERIAL HAVING A VARIEGATED COLORED PATTERN
Donald Field Wiley, Big Springs, Tex., assignor to Cosden Oil & Chemical Company, Big Spring, Tex.
Filed May 3, 1971, Ser. No. 139,512
Int. Cl. B29c *9/00;* B29f *3/12*
U.S. Cl. 264—40 13 Claims



A first extruded stream of molten synthetic thermoplastic material and a second extruded stream of differently colored molten thermoplastic material are combined in a conduit to provide a composite stratified stream having adjacent differentially colored layers extending longitudinally of the stream and having a relatively sharply defined interface therebetween. The composite stream is is then passed through a sheet form extrusion die having its die lips generally aligned with the aforesaid interface, whereby there is produced composite synthetic thermoplastic sheeting having a variegated colored pattern, advantageously a wood-grain type pattern, on at least a portion thereof. The patterned effect is achieved by controlling the temperature of each stream of thermoplastic material to provide a differential in the adjusted melt viscosities of the molten synthetic thermoplastic material and/or the relative output volumes for the individual thermoplastic streams before combination.

3,769,381
PRODUCTION OF MICROPOROUS SHEETS
Klaus Konig, Harro Traubel, and Artur Reischl, Leverkusen, and Bruno Zorn, Cologne-Flittard, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Continuation of abandoned application Ser. No. 763,022, Sept. 26, 1968. This application July 26, 1971, Ser. No. 166,246
Claims priority, application Germany, Oct. 25, 1967, F 53,836
Int. Cl. B29d *27/00*
U.S. Cl. 264—41 6 Claims

Microporous sheets are prepared by reacting an NCO terminated prepolymer with a disecondary diamine in an inert substance that dissolves the reactants but causes only swelling of the product thereof and drying the dispersions thus formed to form microporous foils.

3,769,382
METHOD OF PREPARING RUTHENIUM- OR IRIDIUM-CONTAINING COMPONENTS FOR RESISTORS
Charles C. Y. Kuo, Bayside, N.Y., and Henry S. Angel, North Plainfield, N.J., assignors to Engelhard Minerals and Chemicals Corporation, Murray Hill, N.J.
No Drawing. Filed May 15, 1972, Ser. No. 253,190
Int. Cl. C04b *35/00*
U.S. Cl. 264—61 12 Claims

A composition for use in thick film resistive elements having a low temperature coefficient of resistance is prepared by codepositing from an aqueous solution at least two precious metals one of which is ruthenium or iridium onto lead-containing glass frit, other metal components may also be deposited on the glass frit; prefiring the resulting glass frit at a temperature of at least about 600° C., and preferably below the melting point of the precious metals deposited thereon; and comminuting the prefired glass frit to a size suitable to be formulated in a resistor paste to prepare thick film resistives. A particularly advantageous glass frit for application in thick film resistives has deposited thereon ruthenium or iridium, gold or platinum, and rhodium. Preferably, the composition is essentially free of silver.

ERRATA

For Classes 264—45, 264—68, 264—98, 264—102, 264—157 and 264—209 see:
Patents Nos. 3,769,392 thru 3,769,397

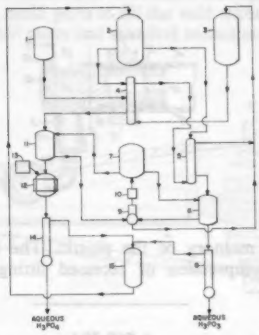
3,769,383
HYDROTHERMAL TRANSFORMATION OF KAOLIN
Vernon J. Hurst, 445 Westview Drive, Athens, Ga. 30601
Continuation-in-part of abandoned application Ser. No. 843,556, July 22, 1969. This application July 26, 1971, Ser. No. 166,291
Int. Cl. C01b *33/26*
U.S. Cl. 423—328 13 Claims

By the hydrothermal transformation of kaolin it is possible to produce a variety of alumino-silicate products.

3,769,384
SEPARATION OF PHOSPHOROUS AND PHOSPHORIC ACIDS BY ALCOHOLIC COUNTER-CURRENT EXTRACTION
William L. Kovacs, Springfield Township, Hamilton County, Phillip F. Pflaumer, Colerain Township, Hamilton County, and David D. Whyte, Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Mar. 1, 1971, Ser. No. 120,026
Int. Cl. B01d *11/04;* C01b *25/16*
U.S. Cl. 423—316 9 Claims

A process for the separation of phosphorous acid from an aqueous solution of phosphorous and phosphoric acids comprising the contacting of said aqueous solution of the

acids with countercurrent streams of water and an aliphatic alcohol in a multi-stage extraction device and re-



covering an organic phase consisting essentially of phosphorous acid and aliphatic alcohol, and an aqueous phase comprising phosphoric acid and water.

3,769,385

METHOD OF PREPARING NON-SOLVATED ALUMINUM HYDRIDE

Theodore C. Kraus, Cheshire, Conn., assignor to Olin Mathieson Chemical Corporation

No Drawing. Filed Feb. 5, 1963, Ser. No. 256,477
Int. Cl. C01b *6/00*
U.S. Cl. 423—645 5 Claims

This invention relates to a method in which an alkali metal hydride is reacted with aluminum chloride in a lower dialkyl ether and in the presence of a minor amount of lithium aluminum hydride to yield non-solvated aluminum hydride.

3,769,386

PROCESS FOR THE PREPARATION OF ZEOLITIC ALUMINO-METALLO SILICATES

Clark A. Rundell, Silver Spring, and Carl V. McDaniel, Laurel, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 822,857, May 1, 1969. This application Sept. 23, 1971, Ser. No. 183,264
Int. Cl. C01b *33/28*
U.S. Cl. 423—263 9 Claims

Zeolitic alumino-metallo silicates are crystallized from an aqueous reaction mixture comprising sources of Na_2O, SiO_2, Al_2O_3 and $R_{2/n}O$, R being a metal, such as magnesium, calcium, yttrium, the rare earths, iron, cobalt, and nickel, and *n* its valence, introduced into the reaction mixture in the form of a complex. Suitable complexing agents include tartrates, citrates, and ethylene diamine tetraacetates. Nucleation centers are added to the reaction mixture to initiate the reaction. The products have utility as components in catalysts and as adsorbents.

3,769,387

PREPARATION OF PHOSPHORUS PENTAFLUORIDE AND FLUOROPHOSPHORIC ACIDS

Robert A. Wiesboeck, Stone Mountain, and John D. Nickerson, Atlanta, Ga., assignors to United States Steel Corporation

No Drawing. Continuation-in-part of application Ser. No. 848,119, Aug. 6, 1969, which is a continuation-in-part of application Ser. No. 702,547, Feb. 2, 1968, both now abandoned. This application Mar. 24, 1971, Ser. No. 127,827
Int. Cl. C01b *25/10*
U.S. Cl. 423—301 17 Claims

Phosphorus pentafluoride and fluorophosphoric acids are prepared from a fluorine source selected from fluorosulfonate fluorides and mixtures of fluorides and fluorosulfonates and a phosphorus source selected from phosphoric acid and mono- or di-fluorophosphoric acid. By an analogous process, arsenic pentafluoride and fluoroarsenic acids are prepared by fluorinating an arsenic source selected from arsenic acid and monofluoroarsenic acid.

3,769,388

OXIDATION OF HYDROGEN CYANIDE TO CYANOGEN IN A LIQUID MEDIUM CONTAINING A SOLUBLE NITRATE SALT OR NITRIC ACID

Kenneth L. Olivier, Placentia, and Michael J. Block, Montebello, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 846,955, Aug. 1, 1969. This application July 28, 1971, Ser. No. 167,034
Int. Cl. C01c *3/00*
U.S. Cl. 423—384 13 Claims

Hydrogen cyanide is oxidized to cyanogen by contacting hydrogen cyanide and oxygen with a substantially anhydrous liquid medium containing a minor, catalytic amount of silver, ruthenium or mercury and a nitrate at a temperature between 0° C. and about 150° C. and at a pressure sufficient to maintain liquid phase conditions. A preferred embodiment is conducting the reaction in the presence of nitrate of one of the aforementioned metals and an alkali metal nitrate.

3,769,389

ANHYDROUS HYDRAZINIUM DIPERCHLORATE PREPARATION

John E. Paustian, Whippany, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Filed Aug. 30, 1965, Ser. No. 483,849
Int. Cl. C01b *7/00, 21/52*
U.S. Cl. 423—386 17 Claims

The invention relates to a process of preparing anhydrous hydrazinium diperchlorate by reacting hydrazinium monohydrochloride or dihydrochloride, carbazic acid or hydrozinum carbazate with excess concentrated perchloric acid. Anhydrous hydrazinium diperchlorate is useful as an oxidizer in solid propellant compositions.

3,769,390

PROCESS FOR PRODUCING CARBON FIBRES

Roland Weisbeck, Odenthal-Voiswinkel, Gottfried Pampus, Leverkusen, Carlhans Suling, Odenthal-Hahnenberg, and Lothar Prets, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 11, 1971, Ser. No. 123,368
Claims priority, application Germany, Mar. 14, 1970, P 20 12 284.3
Int. Cl. C01b *31/07*
U.S. Cl. 423—447 16 Claims

Carbon fibres are produced by heat-treating polyacrylonitrile fibres in an oxidizing atmosphere at a temperature between 150° C. to 400° C. followed by carbonising at a temperature of over 400° C. in a carbonising atmosphere containing 0.5–20% by volume water vapour. In a preferred embodiment, water vapour is provided to the carbonising atmosphere by passing the fibrous material through water or a liquid containing water between the oxidative heat treatment and the carbonisation.

3,769,391

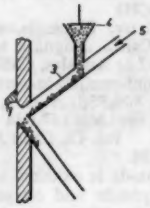
PROCESS FOR REPLENISHING ACTIVE ELEMENTS OF MOBILE BED GRANULAR MASSES IN THE PRODUCTION OF CHLORINE

Léon Ninane, Bierges, Belgium, assignor to Solvay & Cie, Brussels, Belgium

Filed Apr. 13, 1971, Ser. No. 133,593
Claims priority, application Belgium, Apr. 28, 1970, 88,369
Int. Cl. C01b *7/02*
U.S. Cl. 423—502 4 Claims

In a reaction process for the production of chlorine from hydrogen chloride and/or ammonium chloride employing

active elements contained in granular masses forming a mobile bed which moves downwardly through reaction zones and in which a proportion of the granular masses are removed continuously from the top of the bed, cooled, and returned to the masses leaving the bottom of the bed so as to maintain the thermal equilibrium of the system, a method for replenishing the active elements of the masses



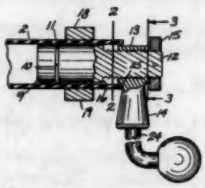
by cooling the withdrawn proportion to below 200° C., continuously delivering to the withdrawn masses, while their temperature is below 200° C., a solution containing such active elements, and regulating the rate of delivery of solution to maintain it at least equal to the rate of loss of the active elements from the totality of masses moving in the bed.

3,769,392
PROCESS FOR MAKING ANATOMICAL PADDING FOR SKI BOOTS
Vanio Tessaro, Crespano del Grappa, Treviso, Italy
Filed Feb. 2, 1971, Ser. No. 111,885
Claims priority, application Italy, Oct. 9, 1970, 84,144/70
Int. Cl. A43b *5/04*; B29d *27/00*
U.S. Cl. 264—45 **1 Claim**

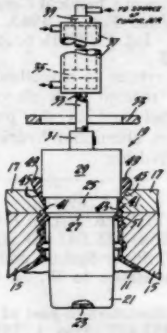
A method of making anatomical padding for boots in in which a liquid mixture for forming expanded polyurethane is introduced into a confined space between adjacent walls of an inner boot while the inner boot is on the foot of the wearer and an outer boot surrounds the inner boot.

3,769,393
METHOD OF FLARING PLASTIC PIPE
Bengt G. Bjalme, Erie, Pa., assignor to Reed Manufacturing Company, Erie, Pa.
Continuation of abandoned application Ser. No. 107,898, Jan. 20, 1971. This application Apr. 11, 1972, Ser. No. 243,087
Int. Cl. B29c *17/02*
U.S. Cl. 264—68 **8 Claims**

A method of flaring thermoplastic pipe such as polybutylene, polyethylene, polyvinyl, etc., used for domestic water service in which the flaring is accomplished by a spinning tool rotated about the axis of the pipe. The flare is effected by local deformation accompanied by heating by internal and external friction in the plastic which overcomes the memory of the plastic. The flare may fit a standard compression or recessed fitting.



3,769,394
METHOD FOR FINISHING BLOW MOLDED PLASTIC CONTAINERS IN THE MOLD
Maurice Gaston Latreille, Batavia, Ill., assignor to American Can Company, Greenwich, Conn.
Filed Sept. 15, 1971, Ser. No. 180,714
Int. Cl. B29c *17/07, 17/12*
U.S. Cl. 264—98 **3 Claims**

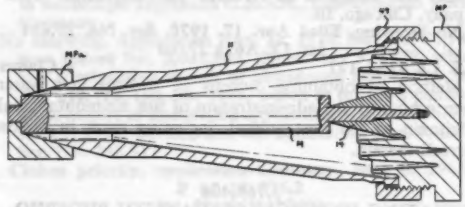


A method and apparatus for finishing the neck portion of a blow molded plastic container in the mold. A parison is aligned in a mold having an undercut in the flash or moil forming cavity. The flash or moil is then sheared above the undercut by a plunger, whose further descent into the parison provides a mold for the sealing surface and the inside and outside neck surfaces adjacent the sealing surface. The descending plunger substantially finish forms the sealing surface and the adjacent neck surfaces.

3,769,395
METHOD OF MAKING A UNITARY CONNECTOR STRUCTURE
William Ludlow Schumacher, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Continuation of abandoned application Ser. No. 843,356, July 22, 1969, which is a division of application Ser. No. 401,546, Oct. 6, 1964, now Patent No. 3,317,882. This application Sept. 20, 1971, Ser. No. 182,113
Int. Cl. B29d *3/00*; B29h *9/11*
U.S. Cl. 264—102 **4 Claims**

A method of making a unitary coaxial connector structure is accomplished by using a mold part having a center connector means in conjunction with a hollow metallic shell member of a coaxial connector. A mandrel means has one end secured to the mold part to hold the center conductor means centrally within the shell member. An-

other mold part is applied onto the other end of the shell member and it is filled to the other end of the mandrel means. Insulation material is introduced through an opening in one of the mold parts to fill the void within the shell member. The mold parts and mandrel means are removed



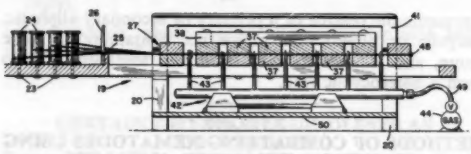
from the shell member and the insulation material therein supports the center connector means in spaced relationship from the shell member and the removal of the mandrel means forms a bore in the insulation in communication with the center connector means.

3,769,396

METHOD FOR PREPARING MEASURED LENGTHS OF DENTAL FLOSS

Rene Jose Espinosa, 21 S. Stone Ave., La Grange, Ill. 60525

Filed Mar. 24, 1971, Ser. No. 127,537
Int. Cl. B29c *17/14*; B29d *31/00*
U.S. Cl. 264—157 **1 Claim**



A method and apparatus for preparing measured lengths of dental floss for use in dental hygiene devices which include stretching wax-coated synthetic unplasticized vinyl resin dental floss between a pair of spaced clamps, closing a grid of heat resistant bars about the stretched dental floss and applying a high-heat source to the dental floss between the bars of the grid to melt the exposed dental floss thereby forming measured lengths of dental floss with nubs at each end thereof.

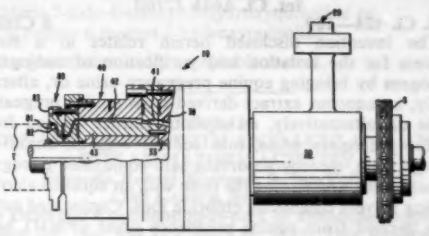
3,769,397

METHOD OF MAKING A TUBE OF PLASTIC FILM

Richard Erwin Cook, Richmond, Va., Donald Lewis Fitzhugh, Topeka, Kans., and George Wilson Luckey, Richmond, Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Original application Oct. 20, 1969, Ser. No. 867,750, now abandoned. Divided and this application Mar. 15, 1971, Ser. No. 124,550
Int. Cl. B29b *1/04*; B29d *23/04*
U.S. Cl. 264—209 **4 Claims**

An apparatus for making plastic film wherein flowable polymeric material is extruded through an extrusion die in the form of a tube of film. A die adapter is provided for interrupting the tubular flow of the polymeric material as it moves from an infeed means to the extrusion die and for forcing the flow into a flow path having a single inlet to form an intermediate stream flow whereby to obtain improved flow characteristics.



A method of moving polymeric material through a die adapter including interrupting its tubular flow path during such movement.

3,769,398

POLYETHYLENIMINE SHAMPOO COMPOSITIONS

Gordon Trent Hewitt, Upper Montclair, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed May 25, 1970, Ser. No. 40,385
Int. Cl. A61k *7/06*
U.S. Cl. 424—70 **8 Claims**

Clear, viscous, homogeneous shampoo compositions which have excellent conditioning characteristics and are effective against *Pityrosporum ovale* containing as the active ingredients a detergent selected from the group consisting of betaines, sulfobetaines, amine oxides, and mixtures thereof, a water-soluble polymer selected from the group consisting of polyethylenimines, ethoxylated polyethylenimines, and propoxylated polyethylenimines having a molecular weight from about 1,800 to about 500,000, and an aqueous vehicle.

3,769,399

INTESTINAL BILE ACID BINDING PROCESS AND COMPOSITIONS

Larry Melvin Hagerman, 1912 E. Mulberry St. 47714, and Donald Louis Schneider, R.R. 5, Box 4 46011, both of Evansville, Ind.

No Drawing. Continuation-in-part of abandoned application Ser. No. 761,115, Sept. 20, 1968. This application Mar. 5, 1971, Ser. No. 121,588
Int. Cl. A61k *27/00*
U.S. Cl. 424—79 **14 Claims**

The systemic administration of from about 89 mg. to 837 mg. of taurine per kg. of body weight per day to an animal of a species having the inherent capacity to secrete in the bile taurine conjugated bile acids substantially improves the intestinal binding of bile acids by a bile-acid binding anion exchange resin such as cholestyramine.

3,769,400

PROCESS FOR THE MANUFACTURE OF A LIVE VACCINE AGAINST THE INFECTIOUS BURSITIS OF CHICKENS

Hans-Joachim Bengelsdorff, Marbach, near Marburg an der Lahn, Germany, assignor to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Germany

No Drawing. Filed Sept. 10, 1971, Ser. No. 179,539
Claims priority, application Germany, Sept. 12, 1970, P 20 45 160.9
Int. Cl. C12k *5/00, 7/00*
U.S. Cl. 424—89 **6 Claims**

Preparation of a live vaccine against infectious bursitis of chickens by adapting the virus to baby mice by about 18 to 25 passages in the presence of an immuno-suppressive agent and a vaccine prepared by this method.

3,769,401
CHEMICAL PROCESS
Lloyd M. Thompson, Pointe Claire, Quebec, Canada, assignor to Charles E. Frosst & Co., Kirkland, Quebec, Canada
No Drawing. Filed Nov. 19, 1970, Ser. No. 91,200
Int. Cl. A61k *17/00*
U.S. Cl. 424—100 8 Claims

The invention disclosed herein relates to a novel process for the isolation and purification of conjugated estrogens by bringing equine pregnancy urine or, alternatively, an aqueous extract derived from equine pregnancy urine or, alternatively, an aqueous extract derived from equine pregnancy urine, into contact with an anion exchange resin, thereby absorbing said conjugated estrogens on said resin, and eluting the resin with an aqueous alcohol eluting solvent containing chloride ions. Conjugated estrogens derived from equine pregnancy urine (PMU) have been used for many years in estrogenic preparations.

3,769,402
PREPARATION OF A HORMONAL DUODENUM EXTRACT
Pierre Jacques Louis Fabre and Lucien Jean Dussourd d'Hinterland, Castres, France, assignors to Investigations Scientifiques Pharmaceutiques, Castres, France
No Drawing. Filed May 14, 1971, Ser. No. 143,613
Int. Cl. A61k *17/00*
U.S. Cl. 424—104 11 Claims

A hormonal duodenums extract is prepared by contacting a duodenums freshly taken from an animal with dilute hydrochloric acid. The extract is treated with ethanol with successive adjustments of the pH value of the ethanolic solution followed by treatment with acetone and ether to give an extract from which pancreozymin and secretin can be separated.

3,769,403
ERICAMYCIN AND PRODUCTION THEREOF
Takeshi Hara, 2222 Komae-machi, Kitatama-gun, Tokyo, Japan; Taro Niida, 127 Naka-Kibogaoka, Hodogaya-ku, Yokohama-shi, Japan; Kimio Satoh, 1700–163 Kami-Hirama, Kawasaki-shi, Japan; Shinichi Kondo, Minami Hiyoshi Danchi 23–204, 1053, Hiyoshi-Hommachi, Kohhoku-ku, Yokohama-shi, Japan; Eiichi Azita, 5–15 Minami 1-chome, Meguro-ku; and Masaji Sezaki, 1–453 Kamiuma-cho, Setagaya-ku, both of Tokyo, Japan; Masaru Shimura, 1443 Hiyoshi-Honcho, Kohhoku-ku, Yokohama-shi, Japan; and Takako Nishio, 1473 Senzoku, Meguro-ku; Kazuko Hamamoto, 6–1 Koigakubo, Kokubunji-shi; and Makiko Koike, 1290, 4-chome, Nishi-Nakanobu, Shinagawa-ku, all of Tokyo, Japan
Filed June 8, 1966, Ser. No. 556,027
Claims priority, application Japan, June 15, 1965, 40/35,203
Int. Cl. A61k *21/00*
U.S. Cl. 424—122 7 Claims

Ericamycin, new antibiotic having empirical formula $C_{31}H_{23}O_8N$, produced from a strain of *Streptomyces varius*, the antibiotic being useful to inhibit the growth of Gram-positive bacteria and also useful to increase synergetically the action of kanamycin, streptomycin, erythromycin, penicillins and chloramphenicol when they are administered together.

3,769,404
EGG COMPOSITION
S. Duane Latham, St. Louis County, and Robert D. Seeley, Crestwood, Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.
No Drawing. Filed Oct. 12, 1970, Ser. No. 80,125
Int. Cl. A23l *1/32*
U.S. Cl. 426—167 11 Claims

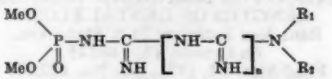
The invention comprises a composition for making cooked frozen omelets and other egg products including egg, water, a combination of cellulose gum derivatives, ethoxylated monoglyceride, and a chemical leavening system. Other ingredients include potato flour and non-fat milk solids and citric acid.

3,769,405
METHODS FOR OBTAINING DIURESIS
John Phillip Aldred, St. Anne, James Winslow Bastian, Park Forest, and Richard Raymond Kleszynski, Kankakee, Ill., assignors to Armour Pharmaceutical Company, Chicago, Ill.
No Drawing. Filed Apr. 17, 1970, Ser. No. 29,691
Int. Cl. A61k *27/00*
U.S. Cl. 424—177 6 Claims

Method of obtaining diuresis of sodium and water from a host by the administration of fish ultimobranchial calcitonin to the host animal, including man, to obtain diuresis therein.

3,769,406
TREATING HYPERGLYCEMIA WITH PHOSPHORYLATED GUANIDINES AND BIGUANIDINES
Jésus Anatol, Paris, Henri Michel Vidalenc, Montmorency, and Gérard Paul Marie Henri Loiseau, Sceaux, France, assignors to Ugine Kuhlmann, Paris, France
No Drawing. Filed June 17, 1971, Ser. No. 154,209
Claims priority, application France, June 19, 1970, 7022648
Int. Cl. A61k *27/00*
U.S. Cl. 424—211 2 Claims

Process for the treatment of hyperglycemia which comprises administering to the patient a compound of the formula:



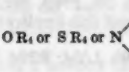
in which Me represents a cation, *n* represents 0 or 1 and

represents the residue of a primary or secondary aliphatic, isocyclic or heterocyclic amine not containing an ionic group, and R_1 and R_2 may be linked together so as to form a heterocyclic ring.

3,769,407
METHODS OF COMBATTING NEMATODES USING PHOSPHONO THIOESTER AMIDATES
Paul C. Aichenegg, Prairie Village, Kans., assignor to Chemagro Corporation, Kansas City, Mo.
No Drawing. Application Nov. 5, 1971, Ser. No. 196,183, now Patent No. 3,702,890, dated Nov. 14, 1972, which is a division of application Ser. No. 889,688, Dec. 31, 1969, now Patent No. 3,666,842, dated May 30, 1972, which in turn is a continuation-in-part of application Ser. No. 620,664, Mar. 6, 1967, now Patent No. 3,489,825, dated Jan. 13, 1970. Divided and this application May 24, 1972, Ser. No. 256,263
Int. Cl. A01n *9/36*
U.S. Cl. 424—219 7 Claims

Compounds having the formula

where R_1 is trichloroethyl or dichlorovinyl, R_2 is lower alkyl or phenyl, R_3 is



where R_4 is alkyl, aryl, haloalkyl or haloaryl, R_5 is alkyl, aryl or haloaryl and X is O or S. Preferably R_4 and R_5 are lower alkyl and R_6 is H or lower alkyl are useful as nematocides, fungicides, and insecticides. Preferably R_1 is 2,2,2-trichloroethyl or 2,2-dichlorovinyl.

3,769,408

PHARMACEUTICAL COMPOSITIONS CONTAINING A HALO-SUBSTITUTED 2-AMINO-BENZYLAMINE-MORPHOLIDE OR A SALT THEREOF

Gerd Krüger, Biberach an der Riss, Otmar Zipp, Osnabruck, and Johannes Keck, Josef Nicki, Hans Machleidt, Gerhard Ohnacker, Robert Engelhorn, and Sigfrid Püschmann, Biberach an der Riss, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

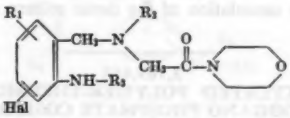
No Drawing. Application Nov. 12, 1970, Ser. No. 88,985, now Patent No. 3,661,903, dated May 9, 1972, which is a continuation-in-part of abandoned application Ser. No. 872,778, Oct. 30, 1969, which in turn is a continuation-in-part of abandoned application Ser. No. 555,696, June 7, 1966. Divided and this application Dec. 9, 1971, Ser. No. 206,517

Claims priority, application Germany, June 8, 1965, P 15 18 375.2

Int. Cl. A61k *27/00*

U.S. Cl. 424—248 12 Claims

Antitussive and respiration-stimulating pharmaceutical compositions containing as an active ingredient N-(2-acetylamino-3,5-dibromo-benzyl) - N - ethyl - β - amino-propionic acid-morpholide or a non-toxic acid addition salt thereof, or a compound of the formula



wherein

Hal is chlorine or bromine,
R_1 is hydrogen, chlorine or bromine,
R_2 is alkyl of 1 to 4 carbon atoms, phenyl or benzyl, and
R_3 is hydrogen, alkanoyl of 2 to 4 carbon atoms, benzoyl, chlorobenzoyl, methoxybenzoyl, nicotinoyl or isonicotinoyl,

or a non-toxic, phormacologically acceptable acid addition salt thereof.

3,769,409

CERTAIN 8-HYDROXYQUINOLINES AS AMOEBICIDES

Eugene Riviere, Issy-les-Moulineaux, Danyele Yvette Vilarel, Chantilly, Roger Lucien Debrie, Brenouille, and Gerard Paul Marie Henri Loiseau, Sceaux, France, assignors to Ugine Kuhlmann, Paris, France

No Drawing. Filed Sept. 15, 1970, Ser. No. 72,540

Claims priority, application France, Sept. 19, 1969, 6931912

Int. Cl. A61k *27/00*

U.S. Cl. 424—245 1 Claim

A process for the treatment of bilharziosis, amoebiasis, leishmaniasis, filariasis or microbial diarrhoea in human beings which comprises administering at least one antimony salt of

8-hydroxyquinoline,
6-methyl-8-hydroxyquinoline,
5-fluoro-8-hydroxyquinoline,
5-chloro-8-hydroxyquinoline,
5-nitro-8-hydroxyquinoline,
5-sulpho-8-hydroxyquinoline,
5-chloro-7-iodo-8-hydroxyquinoline,
5,7-dibromo-8-hydroxyquinoline,
5-chloro-7-iodo-6-methyl-8-hydroxyquinoline or
5,7-dibromo-6-methyl-8-hydroxyquinoline.

Amoebicidal composition comprising at least one antimony salt of

8-hydroxyquinoline,
6-methyl-8-hydroxyquinoline,
5-fluoro-8-hydroxyquinoline,
5-chloro-8-hydroxyquinoline,
5-nitro-8-hydroxyquinoline,
5-sulpho-8-hydroxyquinoline,
5-chloro-7-iodo-8-hydroxyquinoline,
5,7-dibromo-8-hydroxyquinoline,
5-chloro-7-iodo-6-methyl-8-hydroxyquinoline or
5,7-dibromo-6-methyl-8-hydroxyquinoline

and a pharmaceutically acceptable carrier.

3,769,410

TERTIARY AMINES WITH ANTALGIC AND ANTI-INFLAMMATORY ACTIVITY

Francois Robert Bertrand, 9 Rue Voillier, 1200 Geneva, Switzerland

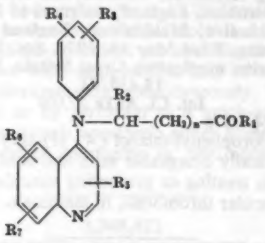
No Drawing. Continuation-in-part of abandoned application Ser. No. 889,723, Dec. 31, 1969. This application June 7, 1972, Ser. No. 260,527

Claims priority, application France, Dec. 31, 1969, 182,572

Int. Cl. A61k *27/00*

U.S. Cl. 424—258 9 Claims

Useful medicament, particularly as an anti-inflammatory and antalgic agent, based on tertiary amine derivatives, characterized by the fact that the tertiary amine derivatives comply to the general formula:



in which:

R_1 is an OH, alkoxy radical of preference methoxy, ethoxy, $O(CH_2)_2—N(CH_3)_2$, $OCH_2—C_6H_4$-propoxy, cyclic or heterocyclic aryloxy, O-mono (or poly) hydroxyalkyl (of preference glycerine), single amino (particularly $NHCH_3$, $N(CH_3)_2$, $NH—(CH_3)_2OH$, $NH—(CH_2)_2N(CH_3)_2$, morpholine), all groups being able to be substituted, being substituted or not;

n is an integer being able to take all values from 0 to 4;

R_2 is the hydrogen, an alkyl (particularly methyl) radical, hydroxy, acid or ester (particularly COOH or $COOC_2H_5$), alkylaryl (particularly) benzyl), cyclic or heterocyclic alkyl acid or alkyl ester, or amino, all groups capable of being substituted, being substituted or not;

R_3 and R_4 are the identical or different radicals, chosen from among the following radicals: OH, hydrogen, halogen, alkyl, cyclic or heterocyclic aryloxy, cyclic or heterocyclic alkoxyaryl, nitro, simple or substituted amino, acid or ester, all groups capable of being substituted amino, acid or ester, all groups capable of being substituted, being substituted or not;

R_5 is the hydrogen, a halogen, an alkyl group, cyclic or heterocyclic aryl, acid or ester, CN, nitro, amino, simple or substituted carbamido ($CONH_2$), all groups being capable of being substituted, being substituted or not;

R_6 and R_7 are the identical or different radicals chosen from among the following groupings: H, alkyl, cyclic or heterocyclic aryl, cyclic or heterocyclic alkylaryl, halogen, nitro, simple or substituted amino, acid or ester, OH, alkoxy, aryloxy, cyclic or heterocyclic aryloxy, cyclic or heterocyclic O-alkylaryl.

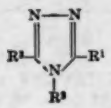
3,769,411

FUNGICIDAL 1,2,4-4H-TRIAZOLE DERIVATIVES

Michael C. Seidel, Levittown, William C. von Meyer, Willow Grove, and Stanley A. Greenfield, Hatboro, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Sept. 4, 1968, Ser. No. 757,490
Int. Cl. A01n 9/00
U.S. Cl. 424—269 13 Claims

Substituted 1,2,4-4H-triazoles of the formula



or a tautomeric form thereof, are fungicides particularly useful for the control of rusts. Certain of these compounds are systemic in action giving excellent control of cereal rusts, notably wheat rust, and are particularly effective as seed treatments.

3,769,412

METHOD OF TREATING VASCULAR THROMBOSIS

John Leheup Archibald, Windsor, and Kenneth Heatherington, Burnham, England, assignors to John Wyeth & Brother Limited, Maidenhead, England

No Drawing. Filed May 15, 1972, Ser. No. 253,518
Claims priority, application Great Britain, May 18, 1971, 15,430/71
Int. Cl. A61k 27/00
U.S. Cl. 424—270 8 Claims

β-(2-p-chlorophenyl-thiazol - 4 - yl)-acrylic acid and its pharmaceutically acceptable salts and acid addition salts are useful in treating or preventing vascular disease, particularly vascular thrombosis, in mammals.

3,769,413

METHOD OF INHIBITING GASTRIC ACID SECRETION

David Kupfer, Pearl River, N.Y., Henry George Roscoe, Montvale, N.J., and Donald Arthur Blickens, Suffern, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed June 24, 1971, Ser. No. 156,511
Int. Cl. A61k 27/00
U.S. Cl. 424—270 1 Claim

This disclosure describes compositions of matter useful for inhibiting the formation of histamine in mammals and the method of inhibiting histamine formation in mammals therewith, the active ingredients of said compositions of matter being certain substituted 4-phenylthiazoles.

3,769,414

SERUM CARDIAC GLYCOSIDE ASSAY

Gary Brooker, Los Angeles, Calif., assignor to University of Southern California, Los Angeles, Calif.

Filed Dec. 30, 1970, Ser. No. 102,719
Int. Cl. A61k 27/04
U.S. Cl. 424—1 12 Claims

A method of assaying serum cardiac glycoside concentrations employing the principle of enzymatic isotope displacement from an enzymatically produced binding enzyme, a serum extract, and a labeled or isotopic cardiac glycoside. The serum extract is prepared by extracting the serum with a halogenated alkane, and partitioning the extract between a buffered solution and an aromatic hydrocarbon having a molecular weight greater than 80. The binding enzyme is made from an enzymatic preparation of whole brain by reacting the preparation with calcium, sodium, magnesium, and ATP.

3,769,415

METHOD OF PREPARING A KILLED VACCINE FOR ORAL USE

Paul Fenje, Toronto, Ontario, Canada, assignor to Connaught Laboratories Limited, Willowdale, Ontario, Canada

No Drawing. Continuation-in-part of abandoned application Ser. No. 614,760, Jan. 9, 1967. This application June 4, 1969, Ser. No. 830,549
Int. Cl. C12k 5/00
U.S. Cl. 424—89 2 Claims

A process for the propagation of rabies virus and the production therefrom of a killed rabies vaccine which is substantially free from non-human, non-specific protein in which the vaccine contains protein from the group consisting of fraction V of human plasma and the material obtained from the supernatant obtained in the production of fraction V by concentration, dialysis and freeze-drying of the said supernatant, the nomenclature "fraction V" being the nomenclature used in tht Cohn cold ethanol process for fractionation of plasma.

The killed rabies vaccine may be potentiated by adjuvants to enhance immunogenic property.

In the following disclosure, the words non-specific protein refer to all proteins other than the specific protein which is related to the cell-adapted rabies virus which is used in the inoculation of the tissue culture composition of cells.

3,769,416

HYDROXYLATED POLYMER-THERMOPLASTIC RESIN-ORGANO PHOSPHATE COMPOSITIONS

Ronald S. Smith, Gilroy, and Jerome C. Kuderna, Jr. and Richard C. Potter, Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

No Drawing. Filed July 28, 1971, Ser. No. 166,977
Int. Cl. A01n 9/36
U.S. Cl. 424—78 10 Claims

A gelled or cross-linked composition comprising in admixture (a) an activated vinyl phosphorus ester, (b) a hydroxylated polymer compatible with said ester and (c) a thermoplastic resin optionally containing a plasticizer, wherein a certain proportion of said ester is interacted with said hydroxylated polymer to form a cross-linked polymer network. Said composition is useful for killing invertebrate pests.

3,769,417

BIOCIDAL POLYMERIC COMPOSITIONS FOR CONTROLLING INVERTEBRATE PESTS

Adriaan W. van Breen, Delft, Netherlands, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed May 12, 1971, Ser. No. 142,736
Claims priority, application Great Britain, May 21, 1970, 24,634/70
Int. Cl. A01n 9/36
U.S. Cl. 424—78 7 Claims

Slow release biocidal generators having improved biocide release characteristics comprise a volatile liquid beta-halovinyl phosphate biocide dispersed in a heterogeneous thermoplastic polymeric mixture comprising an ethylene-vinyl acetate copolymer and a polymer selected from the group consisting of polyvinyl chloride, polystyrene and a block copolymer of a conjugated diene with a mono-alpha-alkenyl arene.

3,769,418

ANTIBIOTIC A 28829

Vladimir Prelog, Zurich, Switzerland, Hans Zaehner, Tubingen, Germany, and Hans Bickel, Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 4, 1966, Ser. No. 584,215
Claims priority, application Switzerland, Oct. 8, 1965, 13,926/65
Int. Cl. H61k 21/00
U.S. Cl. 424—121 3 Claims

Process (and products produced thereby) for manufac-

ture of a new antibiotic, wherein *Streptomyces antibioticus* A 28829 is cultivated in an aqueous nutrient solution containing assimilable sources of carbon and nitrogen, as well as inorganic salts, under aerobic conditions until said nutrient solution displays a substantial antibiotic activity. The antibiotic obtained is effective against gram-positive microorganisms and certain fungi.

3,769,419

INSECTICIDAL USE OF PHOSPHORUS CONTAINING OXIME CARBAMATES

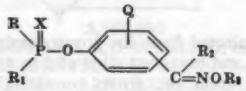
Arnold D. Gutman, Pinole, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Application May 20, 1968, Ser. No. 730,588, which is a continuation-in-part of application Ser. No. 646,467, June 16, 1967, both now abandoned. Divided and this application June 25, 1970, Ser. No. 59,845

Int. Cl. A01n 9/36

U.S. Cl. 424—211 38 Claims

A method of controlling insects which comprises contacting said insects with an insecticidally effective quantity of a compound having the formula



in which

X is selected from the group consisting of oxygen and sulfur;

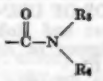
R is selected from the group lower alkyl or lower alkoxy, having from 1 to 6 carbon atoms, inclusive;

R_1 is selected from the group consisting of lower alkyl, lower alkoxy having from 1 to 6 carbon atoms, inclusive, amino, lower alkyl-substituted amino and phenyl;

Q is selected from the group consisting of hydrogen, divalent tetramethylenediene-1,3,lower alkoxy or lower alkyl having from 1 to 4 carbon atoms, inclusive, nitro, and halogen; and lower dialkyl substituted thionophosphoryloxy;

R_2 is selected from the group consisting of hydrogen, lower alkyl having from 1 to 4 carbon atoms and phenyl;

R_3 is a carbamate



in which R_5 and R_6 are independently selected from the group consisting of hydrogen; alkyl having from 1 to 10 carbon atoms, inclusive, substituted alkyl having 1 to 6 carbon atoms, inclusive, said substituent is selected from the group consisting of hydroxy, halogen, amino, dilower alkylamino, and lower alkoxy; lower alkenyl having from 2 to 4 carbon atoms, inclusive; carboalkoxy alkyl having a total of from 3 to 8 carbon atoms, inclusive; cycloalkyl having from 3 to 6 carbon atoms, inclusive; phenyl; naphthyl; substituted phenyl wherein said substituents are selected from the group consisting of halogen, lower alkyl, lower alkoxy, lower thioalkyl, lower dialkylamino in which said lower alkyl and lower alkoxy moieties having from 1 to 4 carbon atoms, inclusive, nitro, cyano, trifluoromethyl and combinations thereof.

3,769,420

MASTITIS TREATMENT

Charles S. Castner, Reading, Pa., assignor to Schuyler Development Corporation

No Drawing. Filed Dec. 30, 1970, Ser. No. 102,901

Int. Cl. A61k 27/00, 21/00

U.S. Cl. 424—227 9 Claims

A method and composition for bovine teat infusion are provided based on a mixture of 60% to 90% cocoa butter fatty acids and 10% to 40% glycerine which may be suspended alone in warm water and injected into the bovine teat canals or mixed with an active antibiotic and then suspended in warm water and injected into the teat canals.

3,769,421

INJECTABLE 3α-HYDROXY-PREGNANE-11,20-DIONE ANESTHETIC COMPOSITIONS

Guy Bernard Pitel, Courbevoie, France, assignor to Societe d'Etudes Scientifiques et Industrielles de l'Ile-de-France, Paris, France

No Drawing. Continuation-in-part of abandoned application Ser. No. 725,948, May 1, 1968. This application Dec. 7, 1970, Ser. No. 95,980

Claims priority, application France, May 3, 1967, 105,231

Int. Cl. A61k 17/00, 27/00

U.S. Cl. 424—243 2 Claims

The sterilized compositions of this invention utilize predione (3α - hydroxy-pregnane-11,20-dione). Although predione per se is substantially insoluble in water, the compositions of this invention are miscible in all proportions with water. Such compositions may be administered to mammals intravenously, subcutaneously, by slow or rapid injection or by perfusion as a quick-acting highly effective and non-toxic anesthetic either alone or in conjunction with other anesthetics or pharmaceutical compositions.

3,769,422

N-ARYLALKYLIMIDAZOLE FUNGICIDAL AGENTS

Helmut Timmler, Wuppertal-Vohwinkel, Wilfried Draber and Karl Heinz Büchel, Wuppertal-Elberfeld, Ferdinand Grewe, Burscheid, and Helmut Kaspers and Hans Scheinpflug, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

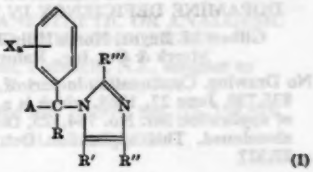
No Drawing. Filed Feb. 17, 1971, Ser. No. 116,291

Claims priority, application Germany, Feb. 29, 1970, P 20 07 794.5

Int. Cl. A01n 9/22

U.S. Cl. 424—273 11 Claims

Fungicidal compositions of and methods of combating fungi using certain N - arylalkylimidazoles of the formula



(I)

in which

R is an aliphatic or cycloaliphatic radical with up to 20 carbon atoms,

R', R'' and R''', which may be the same or different, are hydrogen, or alkyl, alkenyl or cycloalkyl with up to 6 carbon atoms,

A is an optionally substituted aryl, pyridyl, aliphatic or cycloaliphatic radical with up to 12 carbon atoms,

X is an alkyl, alkoxy or alkylmercapto radical with up to 6 carbon atoms, or an aryloxy or phenyl radical, or an electronegative radical or a basic radical, and *n* is 0, 1 or 2,

as well as salts of these compounds.

3,769,423

COMBATTING BACTERIA AND FUNGI WITH CYANOCARBAMOYLOXIMES

Adolf Hubele, Riehen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

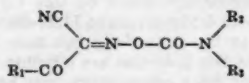
No Drawing. Original application Nov. 7, 1967, Ser. No. 681,101, now Patent No. 3,625,987, dated Dec. 7, 1971. Divided and this application May 26, 1971, Ser. No. 147,192

Claims priority, application Switzerland, Nov. 10, 1966, 16,259/66

Int. Cl. A01n *9/06;* A61k *27/00*

U.S. Cl. 424—304 12 Claims

The present invention relates to new carbamates of the general formula



in which R_1 represents an alkoxy, aralkoxy, cycloalkoxy, aryloxy, alkylthio, aralkylthio, cycloalkylthio or arylthio radical, or in which R_1 represents a secondary or tertiary amido group, R_2 represents a hydrogen atom or a lower aliphatic radical and R_3 represents a hydrogen atom, a lower aliphatic radical or an unsubstituted or substituted aryl radical.

The new compounds can be prepared by reaction of a cyanacetic acid ester or cyanacetic acid amide with an agent yielding nitrous acid and further reaction of the resulting oxime with either an isocyanate or a carbamic acid halide. The resulting carbamates are advantageously used as active substances for combatting various kinds of pests, especially in preparations for combatting bacteria and fungi affecting animals and plants. Those separations may comprise, if desired, other known additives and pesticides.

3,769,424

COMPOSITION AND METHOD OF TREATING DOPAMINE DEFICIENCY IN BRAIN TISSUE

Gilbert M. Bayne, North Hills, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 835,730, June 23, 1969, which is a continuation-in-part of application Ser. No. 764,325, Oct. 1, 1968, both now abandoned. This application Oct. 1, 1970, Ser. No. 77,327

Int. Cl. A61k *27/00*

U.S. Cl. 424—317 14 Claims

The dopamine content in brain tissue of animals is increased by administering to the animal L-dopa or its salts in combination with L-α-hydrazino-α-lower alkyl-3,4-dihydroxyphenyl propionic acid or its salts or α-hydrazino-3,4-dihydroxyphenyl propionic acid or its salts. The increased dopamine content in brain tissue tends to alleviate some of the symptoms caused by Parkinsonism and similar diseases.

3,769,425

SPIRO BENZOCYCLANE ACETIC ACID COMPOUNDS IN THE TREATMENT OF PAIN AND INFLAMMATION

Genevieve Rousseau, Paris, André Allais, Les Lilas, and André Poittevin, Vaires-sur-Marne, France, assignors to Roussel-UCLAF, Paris, France

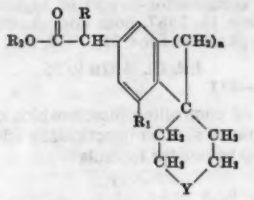
No Drawing. Original application Aug. 31, 1970, Ser. No. 68,530, now Patent No. 3,682,964, dated Aug. 8, 1972. Divided and this application June 7, 1972, Ser. No. 260,539

Claims priority, application France, Sept. 5, 1969, 6930259

Int. Cl. A61k *27/00*

U.S. Cl. 424—317 15 Claims

Novel spiro benzocyclane acetic acid compounds of the formula



(I)

wherein R is selected from the group consisting of hydrogen and linear and branched alkyl of 1 to 4 carbon atoms, R_1 is selected from the group consisting of hydrogen, chlorine, trifluoromethyl and lower alkoxy, Y is selected from the group consisting of methylene, oxygen and sulfur, *n* is 2, 3 or 4 and R_2 is selected from the group consisting of hydrogen, substituted or unsubstituted alkyl of 1 to 6 carbon atoms and cation of non-toxic, pharmaceutically acceptable mineral and organic bases, processes for their preparation and novel intermediates. The compounds of Formula I have analgesic and anti-inflammatory properties.

3,769,426

ANTI-ARRYTHMIC AGENT

Bryan B. Malloy and Ronald R. Tuttle, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed July 3, 1972, Ser. No. 268,378

Int. Cl. A61k *27/00*

U.S. Cl. 424—321 1 Claim

2-amino-4-phenylsulfonylbenzenesulfonamide counteracts cardiac arrythmias.

3,769,427

PHARMACEUTICAL COMPOSITIONS AND METHODS OF USING SAME

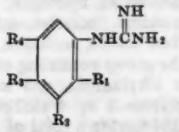
John Lawrence Hughes and Robert Chung-Huan Liu, Kankakee, Ill., assignors to Armour Pharmaceutical Company, Chicago, Ill.

No Drawing. Original application Oct. 1, 1970, Ser. No. 77,343, now Patent No. 3,681,459. Divided and this application May 25, 1972, Ser. No. 257,042

Int. Cl. A61k *27/00*

U.S. Cl. 424—326 7 Claims

Aromatic guanidine compounds having the formula:



wherein: R_1 is hydrogen; R_2 is chloro, fluoro or bromo; R_3 is hydroxy, or alkyl having one to four carbon atoms; and R_4 is hydrogen, chloro, bromo or fluoro and their salts are shown to be active as vasoconstrictor agents and create useful pharmaceutical preparations when deployed with a pharmaceutically acceptable carrier for administration to a host, e.g., man, requiring vasoconstrictive therapy.

3,769,428

ETHER ANESTHETIC AGENT

Bernard M. Regan, Chicago, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

No Drawing. Original application Aug. 10, 1970, Ser. No. 62,679, now Patent No. 3,689,459, dated Sept. 5, 1972. Divided and this application July 3, 1972, Ser. No. 268,363

Int. Cl. A61k 27/00

U.S. Cl. 424—342 1 Claim

The method inducing anesthesia by administering an anesthetically effective amount of difluoro 1,2,2,3,3-pentafluoropropyl ether.

3,769,429

METHYLCYCLOPROPANES AS INHALATION ANESTHETICS

Gerald J. O'Neill, Arlington, Charles W. Simons, Bedford, and Charles A. Billings, Concord, Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

No Drawing. Filed June 2, 1972, Ser. No. 259,253

Int. Cl. A61k 27/00

U.S. Cl. 424—352 1 Claim

New compounds 1 - methyl-1-trifluoromethyl-2,2-difluorocyclopropane and 1-methyl-1,2,2-trifluorocyclopropane have been found useful as general inhalation anesthetics.

3,769,430

PHARMACEUTICAL COMPOSITIONS CONTAINING A BIS-(DIHYDROXY-PHENYL-ETHYLOL)-SUBSTITUTED ALKYLENEDIAMINE AND-METHODS OF USING SAME

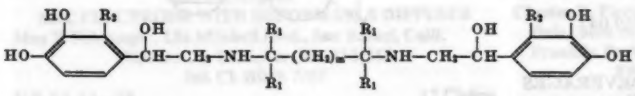
Kurt Schromm, Anton Mentrup, Karl Zeile, and Ernst-Otto Renth, Ingelheim am Rhein, Albrecht Engelhardt, Mainz, and Werner Traunecker, Munster-Sarmsheim, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

No Drawing. Original application Dec. 2, 1969, Ser. No. 881,606, now Patent No. 3,673,187, dated June 27, 1972. Divided and this application May 12, 1972, Ser. No. 252,615

Int. Cl. A61k 27/00

U.S. Cl. 424—330 10 Claims

Pharmaceutical compositions comprising as an active ingredient a compound of the formula



wherein

R_1 is hydrogen or methyl,

R_2 is methyl, methoxy, ethoxy or chlorine and, if R_1 is methyl, additionally hydrogen, and

m is a whole number from 0 to 10, inclusive,

or a non-toxic, pharmacologically acceptable acid addition salt thereof; and methods of using the same as uterine spasmolytics, antipruritics, vasodilators and antiallergics.

3,769,431

METHOD OF REDUCING SERUM CHOLESTEROL WITH 2-PHENOXYALKANOIC ACID ESTERS

Norman H. Grant, Wynnewood, Del., and Harvey E. Alburn, West Chester, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Original application June 18, 1969, Ser. No. 737,837, now Patent No. 3,717,669, dated Feb. 20, 1973. Divided and this application Sept. 20, 1971, Ser. No. 182,260

Int. Cl. A61k 27/00

U.S. Cl. 424—308 2 Claims

This invention concerns 2-phenoxyalkanoic acid esters which are pharmacologically active as anticholesterol agents.

3,769,432

COMPOSITIONS AND METHOD OF USE OF SUBSTITUTED GUANIDINES

Andrew Stephen Tomcufcik, Old Tappan, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 833,167, June 13, 1969, which is a continuation-in-part of application Ser. No. 741,247, July 1, 1968, both now abandoned. This application Dec. 2, 1970, Ser. No. 94,591

Int. Cl. A61k 27/00

U.S. Cl. 424—326 15 Claims

The preparation of 1,3-bis(4- and 3,4-substituted benzylideneamino)guanidines and their salts, and of 1-loweralkyl - 1,3-bis(4- and 3,4-substituted benzylideneamino) guanidines and their salts and of 1,3-diloweralkyl-1,3-bis (4- and 3,4-substituted benzylideneamino)guanidines and their salts from 1,3-diaminoguanidine and its salts, and from 1-loweralkyl-1,3-diaminoguanidine and its salts and from 1,3-diamino-1,3-dilower-alkylguanidine and its salts, respectively, and N-loweralkanoyl derivatives thereof.

The compositions and compounds prepared have antiprotozoal activity particularly against coccidiosis and malaria.

3,769,433

INHALANT ANESTHETIC COMPOSITIONS AND METHOD

Ross C. Terrell, Plainfield, N.J., assignor to Airco, Inc., New York, N.Y.

No Drawing. Filed July 2, 1971, Ser. No. 159,512

Int. Cl. A61k 27/00

U.S. Cl. 424—342 6 Claims

The novel compounds 2,2-difluoroethyl difluoromethyl ether and its 1-chloro derivative having the formula $CHF_2CHCl—O—CHF_2$ are disclosed. The latter compound can be prepared through chlorination of 2,2-difluoroethyl difluoromethyl ether which in turn can be made by reaction of 2,2-difluoroethanol and difluorochloromethane in the presence of aqueous sodium hydroxide.

The novel compounds are useful as inhalation anesthetics and as solvents and dispersants for fluorinated materials.

3,769,434

INHALATION ANESTHETIC OR ANALGESIC METHOD AND COMPOSITION

Ross C. Terrell, Plainfield, N.J., assignor to Airco, Inc., New York, N.Y.

No Drawing. Filed July 2, 1971, Ser. No. 159,529

Int. Cl. A61b 27/00

U.S. Cl. 424—342 3 Claims

The present invention relates to the novel compound 1,1,2,2-tetrafluoroethyl fluoromethyl ether

$$(CHF_2CF_2OCH_2F)$$

The compound is prepared through selective stepwise chlorination and fluorination of 1,1,2,2-tetrafluoroethyl methyl ether. The compound is useful as an anesthetic and as a solvent and dispersant for fluorinated materials. The compound has the unusual property of causing an analgesic effect on mammals at subanesthetic concentrations.

3,769,435

METHOD OF FUMIGATING INSECTS USING 2 - CHLOROMETHYL - 1,3-POLYFLUORO-2-PROPANOLS

Robert E. A. Dear and Everett E. Gilbert, Morris Township, Morris County, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Original application May 20, 1969, Ser. No. 826,127, now Patent No. 3,616,360, dated Oct. 26, 1971. Divided and this application Oct. 18, 1971, Ser. No. 190,268

Int. Cl. A01n *9/24*

U.S. Cl. 424—343 8 Claims

2-chloromethyl-1,3-polyfluoro - 2 - propanols and their fluorinated derivatives are useful as fumigants against insects.

3,769,436

COMPOSITIONS AND METHODS FOR THE TREATMENT OF HYPERLIPEMIA

Louis Lafon, 5 Rue de l'Alboni, Paris 16 ème, France

No Drawing. Continuation-in-part of abandoned application Ser. No. 60,731, Aug. 3, 1970. This application Oct. 7, 1971, Ser. No. 187,539

Claims priority, application Great Britain, Aug. 8, 1969, 39,894/69

Int. Cl. A61k *27/00*

U.S. Cl. 424—337 11 Claims

Compounds of the formula

$$Z—CH_2—X—A—X—CH_2Z$$

in which X is oxygen, sulfur, sulfinyl, sulfonyl or imino, A is 2-hydroxypropylene, alkylene of 5 to 10 carbon atoms, phenylene, biphenylene or naphthylene and Z is hydroxymethylene, carboxy or carbo(lower alkoxy) are normolipemic agents useful in the treatment of hyperlipemia. Pharmaceutical compositions utilizing such compounds and their method of use are disclosed. A typical embodiment is the use of 1,10-bis(2-hydroxyethylthio) decane.

ERRATA

For Classes 426—169, 426—345, 426—342, 426—45, 426—148, 426—428, 426—151, 426—244, 426—251, 426—281, 426—368, 426—242, 426—65, 426—250 and 426—326 see:

Patents Nos. 3,769,027 thru 3,769,042

3,769,437

PREPARATION OF ALCOHOLIC BEVERAGES FROM OIL SEED WHEY

Akiva Pour-el, St. Paul, Minn., and Gollamudi Venka Reddy, Decatur, Ill., assignors to Archer Daniels Midland Company, Decatur, Ill.

No Drawing. Filed Feb. 25, 1971, Ser. No. 118,959

Int. Cl. C12g *1/00*

U.S. Cl. 426—11 9 Claims

Alcoholic beverages are produced by fermenting with alcohol producing yeast under anaerobic conditions a mixture containing oil seed whey obtained as a waste material from the isolation of oil seed protein, and a carbohydrate.

3,769,438

READY-TO-EAT CEREAL AND COATING COMPOSITION

David T. Rusch and Matthew J. Lynch, Wilmington, Del., assignors to ICI America Inc., Wilmington, Del.

No Drawing. Filed Apr. 26, 1971, Ser. No. 137,691

Int. Cl. A23l *1/18*

U.S. Cl. 426—99 7 Claims

Snacks and cereals having a rich apparent mouthfeel as well as satisfactory bowl-life are produced by incorporating a hexitol such as sorbitol or mannitol with a fat-containing coating composition such that the weight ratio of hexitol/fat ranges between .03 to 2.

3,769,439

METHOD OF PEELING FRUITS AND VEGETABLES

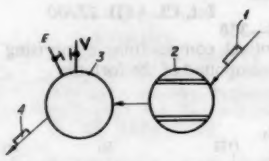
Iliya Chudomirov Kafejiev, Lubomir Nikolov Guenchev, and Kostadin Spirov Klyamov, Plovdiv, Bulgaria, assignors to DSO "Bulgarplod," Sofia, Bulgaria

Filed Dec. 3, 1970, Ser. No. 94,779

Claims priority, application Bulgaria, Dec. 12, 1969, 13,297

Int. Cl. A23n *7/00*

U.S. Cl. 426—482 4 Claims



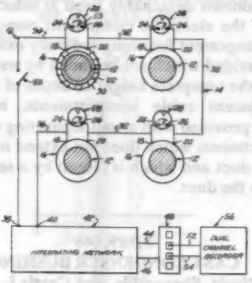
Method and apparatus for peeling fruits and vegetables, wherein the fruits and vegetables are heated superficially from 60 to 100° C., after which they are placed in a vacuum having an absolute pressure of about 460 mm. mercury column or lower, causing thereby an explosive separation of the skin, and are then taken out of the vacuum and processed in known ways.

3,769,440

CURRENT MONITORING SYSTEM FOR ELECTRIC ARC FURNACE CONDUCTORS

Daniel J. Goodman, 23236 Westbury Dr., St. Clair Shores, Mich.

Filed Sept. 27, 1972, Ser. No. 292,718
Int. Cl. F27d 11/10
U.S. Cl. 13—12 9 Claims



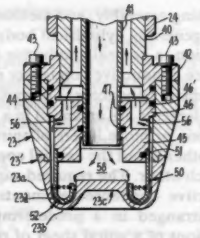
Each conductor cable of the set of conductor cables for each phase, extending from the furnace transformer to the electric arc furnace, is encircled by an annular close-wound current transformer coil, the terminals of which are connected to a low-voltage voltmeter. All of the voltmeters for each phase are interconnected and in turn are connected to an integrating network, the output of which is connected to a terminal strip or block for further connection to a suitable recording instrument. Each voltmeter may, if desired, be provided with an additional audible or visual signal device. If any furnace conductor, cable is for any reason carrying less than its proportion of the current, thereby reflecting a deterioration of that particular cable, that condition is immediately indicated by a lowered voltage reading on its particular voltmeter, so that the operator can take immediate corrective action.

3,769,441

ARC ELECTRODE WITH DEFORMABLE DIFFUSER

Max P. Schlienger, 136 Mitchell Blvd., San Rafael, Calif.

Filed Dec. 6, 1972, Ser. No. 312,453
Int. Cl. H05b 7/08
U.S. Cl. 13—18 12 Claims



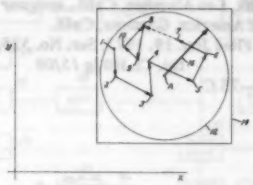
An arc electrode with a deformable coolant fluid diffuser. The diffuser has a generally cylindrical shape with an involute tip end and a plurality of projections extending from the outer surface. The projections cooperate with the inner wall surface of the electrode to provide a number of coolant fluid passageways. The malleable structure of the diffuser prevents restriction of the passageways and stress induced cracking of the electrode tip as the electrode is subjected to thermally induced deformations.

3,769,442

COMPRESSED DATA BASE FOR RADAR LAND MASS SIMULATOR

Robert A. Heartz, Deland, Fla., and Dan Cohen, Cambridge, Mass., assignors to General Electric Company, New York, N.Y.

Filed Aug. 3, 1972, Ser. No. 277,778
Int. Cl. G09b 9/00
U.S. Cl. 35—10.4 4 Claims



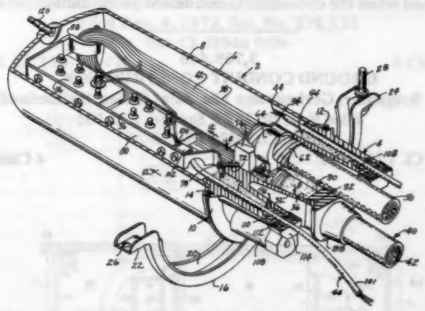
A process for producing a compressed data base for a radar land mass simulator which is descriptive of a selected land mass. Topographic maps or other data sources are used to determine prominent cultural features and terrain features such as ridge and valley lines. These features are identified by a string of contiguous straight line segments. The end points of each line segment can be identified in terms of their x, y, and z coordinates relative to a chosen origin. Here, however, only the first point in a string is identified in the terms of full x, y, and z coordinates, with each subsequent point identified in terms of the increment (Δx, Δy, and Δz) from the preceding point.

3,769,443

BURIED-TYPE SPLICE CASE

Chester E. Pierzchala, Wheaton, and Milton A. Klayum, Wood Dale, both of Ill., assignors to Reliable Electric Company, Franklin Park, Ill.

Filed Nov. 5, 1971, Ser. No. 196,024
Int. Cl. H02g 9/02
U.S. Cl. 174—38 3 Claims



A buried-type ready access splice closure comprises a dielectric base with a central opening for receiving the op-

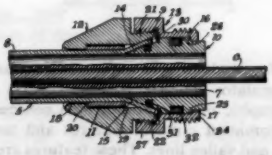
posite runs of a loop of cable. The base contains clamping means for clamping the runs of the cable and for grounding the shield of the cable outside of the base. The loop of cable has its coverings stripped away to expose the insulated core wires for splicing to service wires. The loop is supported by a bracket that is attached to the base and to the clamping means, and the loop and bracket are enclosed by a cover that is removably clamped to the base. Additional openings are provided in the base for receiving the service wires which may be sealed to the base by a nut and bushing arrangement. The cable runs are sealed by potting compound in the central opening.

3,769,444

CONNECTOR MEANS FOR CABLES WITH SEMI-RIGID SHEATHS

Oscar J. Malik, Los Alamitos, Calif., assignor to Aeronics Corporation of America, Gardena, Calif.

Filed Jan. 19, 1973, Ser. No. 325,147
Int. Cl. H02g *15/08*
U.S. Cl. 174—75 C **7 Claims**



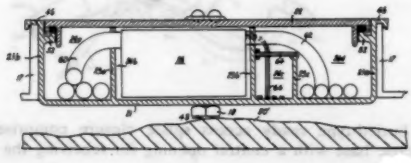
Connector means for a coaxial cable having a semi-rigid sheath and having a sleeve on the rearward end of the cable, said sleeve being provided with a forwardly directed frusto-conical end that forms a wedge, the sheath, on its end directed toward the sleeve being frusto-conically flared and with a circumferentially enlarged abutment forward of the flare. Two threadedly engaged members, one having end abutment with the sleeve and the other in opposed abutment with the abutment on the sheath, said members, when threadedly engaged and drawn together, drawing the sleeve forwardly, while the member in abutment with the sheath abutment remains stationary, thereby creating a clamping engagement of the flare on the sheath between the frusto-conical end of the sleeve and a frusto-conical bore on said stationary member. The sheath may be initially provided with such a flare or the flare may be formed when the connector is assembled on the cable.

3,769,445

GROUND CONDUIT CONSTRUCTION

Otto Bregenzer, Gerbestrasse 15a, Saint Gallen, Switzerland

Filed Feb. 10, 1972, Ser. No. 225,181
Int. Cl. H02g *3/04, 3/26*
U.S. Cl. 174—101 **4 Claims**



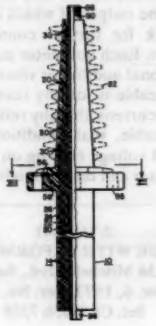
An apparatus for carrying electrical cables or pipes and electrical connection devices in buildings, comprising a longitudinally elongated continuous duct adapted to be positioned in the ground or foundation and having a generally rectangular U-shaped transverse cross section and an opened top and a removable cover closing said top. The duct has a plurality of longitudinally extending walls dividing the duct into at least one cable compartment extending over the entire length of said duct, and at least one electrical component assembly compartment adjacent to and co-extensive in length with said cable compartment and including connection assembly components detachably fixed at selected points along the length of the electrical component compartment. In the preferred arrangement four longitudinally extending compartments are provided which are bounded by walls which extend substantially the complete height or depth of the duct. One of the two adjacent cable compartments, however, is advantageously provided with a wall separating the two adjacent cable compartments which does not extend into the complete height of the duct and which is closed by a separate cover arranged within the duct.

3,769,446

CAST CONDENSER BUSHING

Paul W. Martincic, Sharpsville, and Curtis L. Moore, Sharon, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 22, 1971, Ser. No. 191,584
Int. Cl. H01b *17/28*
U.S. Cl. 174—143 **6 Claims**



A condenser bushing assembly, and method of manufacturing same, having a generally cylindrical body portion formed of cast solid insulation, a central conductor in the body portion, and one or more conductive condenser elements radially spaced from said central conductor. The radially spaced conductive condenser elements are arranged in a spiral configuration and comprise one or more layers of spiral arranged concentrically of each other about the central conductor and radially spaced from each other. The required capacitive relationship of the conductive condenser elements is provided by metallic coatings arranged in a predetermined pattern on predetermined portions of a spiral sheet of polycarbonate. A spiral sheet of polycarbonate comprising a plurality of turns having the conductive condenser elements provided thereon is positioned in a mold and the insulation which forms the body portion of the condenser is cast around the spiral polycarbonate member. The material used to cast the cylindrical body portion chemically attacks the polycarbonate of the spiral member during the casting operation and causes the polycarbonate of the spiral member to soften and amalgamate with the material of the body portion of the condenser to eliminate all interfaces between the material of the body portion of a condenser bushing and the material of the polycarbonate

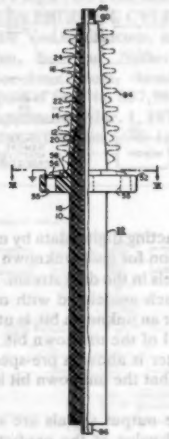
spiral member carrying the conductive elements of the condenser system, and the conductive elements of the condenser system.

3,769,447

CAST CONDENSER BUSHING

Jame F. Quirk, Penn Hills; Paul W. Martincic, Sharpsville, and Kevin F. Friedrich, Sharon, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 26, 1971, Ser. No. 192,247
Int. Cl. H01b 17/28
U.S. Cl. 174—143 7 Claims



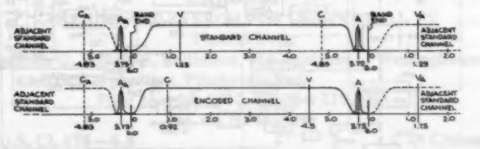
A condenser bushing assembly, and method of manufacturing same, having a generally cylindrical body portion formed of cast solid insulation, a central conductor in the body portion, and one or more concentric conductive condenser elements, radially spaced from the central conductor, disposed in the body portion. The required capacitive relationship of the conductive condenser elements is provided by metallic coatings arranged in a predetermined pattern on predetermined portions of tubular members of polycarbonate. The tubular members of polycarbonate are positioned in a mold and the insulation which forms the body portion is cast around the polycarbonate tubular members. The material used to cast the cylindrical body portion chemically attacks the polycarbonate of the tubular members during the casting operation and causes the polycarbonate to soften and amalgamate with the material of the body portion to eliminate all interfaces between the material of the body portion of the bushing and the material of the tubular members carrying the conductive elements of the condenser system.

3,769,448

AUDIO ENCODING/DECODING SYSTEM FOR CATV

Patrick R. J. Court, Los Angeles, Calif., assignor to Optical Systems Corporation, Los Angeles, Calif.

Filed Sept. 28, 1971, Ser. No. 184,474
Int. Cl. H04n 1/44
U.S. Cl. 178—5.1 10 Claims



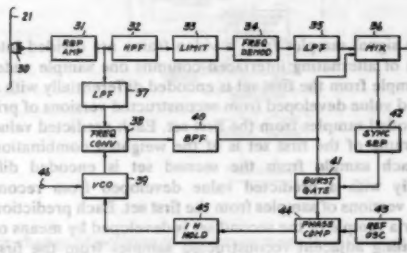
In a Community Antenna Television (CATV) System, a system for hiding the audio portion of a television program from unauthorized television receivers connected to the CATV distribution system, is provided by converting the video carrier frequency to another frequency whereby intercarrier demodulation at a receiver, which is necessary to recover the audio program, cannot be accomplished. Provision is made at authorized receivers for restoring the video and audio carriers to their proper relative frequency locations.

3,769,449

COLOR VIDEO SIGNAL RECORDING AND REPRODUCING SYSTEM

Yuzuru Inoue, Tokyo, Japan, assignor to Victor Company of Japan, Ltd., Yokohama-City, Kanagawa-ken, Japan

Filed Jan. 14, 1972, Ser. No. 217,904
Claims priority, application Japan, Jan. 16, 1971, 46/974
Int. Cl. H04n 9/02
U.S. Cl. 178—5.4 CD 8 Claims



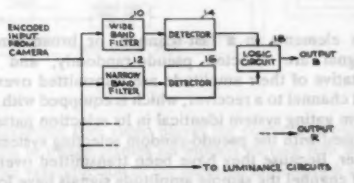
A color video signal recording and reproducing system comprises means for separating a luminance signal and a carrier chrominance signal from a color video signal. The luminance signal is frequency modulated, and the carrier chrominance signal is converted to a lower frequency band. The resulting signals are superimposed and recorded upon a recording medium, for demodulating the frequency modulated luminance signal, and for frequency converting the chrominance signal to its original frequency band, a feedback loop is used. This loop includes a voltage control oscillator operated responsive to means for detecting an error in the running speed of the recording medium. The voltage control oscillator is controlled so that the feedback loop is prevented from being drawn to false stabilizing points which are shifted away from the frequency of the chrominance subcarrier responsive to frequencies which are equl to the frequency of a horizontal synchronizing signal multiplied by an integer.

3,769,450

CROSS TALK REDUCING CIRCUITRY FOR ENCODED COLOR TELEVISION CAMERAS

Louis F. Schaefer, Palo Alto, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed Aug. 4, 1972, Ser. No. 278,122
Int. Cl. H04n 9/06
U.S. Cl. 178—5.4 R 5 Claims

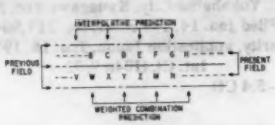


There has been developed a single camera system capable of providing color television signals. In such a system, the camera develops encoded signals which must be separated by electrical filters in order to obtain the various color signal components. This invention provides a filtering system of a type which minimizes the cross talk for undesired noise signals which occur with the electrical filters presently being employed.

3,769,451
VIDEO ENCODER UTILIZING COLUMNS OF SAMPLES ENCODED BY PREDICTION AND INTERPOLATION

Denis John Connor, New Shrewsbury, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 16, 1972, Ser. No. 280,964
Int. Cl. H04n 7/12
U.S. Cl. 178—6 10 Claims

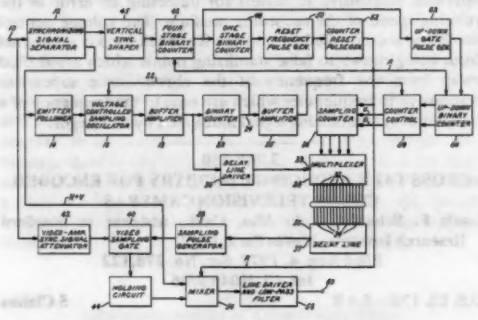


Video signal samples from a video frame are divided into two sets of alternating interlaced columns one sample wide. Each sample from the first set is encoded differentially with a predicted value developed from reconstructed versions of priorly encoded samples from the first set. Each predicted value for a sample of the first set is of the weighted combination type. Each sample from the second set is encoded differentially with a predicted value developed from reconstructed versions of samples from the first set. Each prediction value for a sample of the second set is developed by means of interpolating adjacent reconstructed samples from the first set.

3,769,452
NARROW BAND TELEVISION SYSTEM

Robert F. Stone, Exton, Pa., assignor to General Electric Company, New York, N.Y.

Filed June 8, 1972, Ser. No. 261,073
Int. Cl. H04n 7/12
U.S. Cl. 178—6 17 Claims

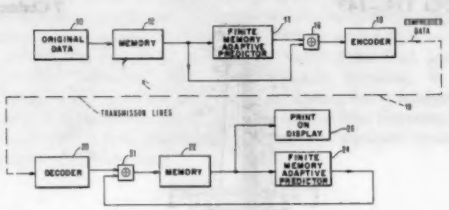


Picture elements in a fast-scanned, or broad-bandwidth video signal are selected pseudo-randomly, and signals representative of their amplitude are transmitted over a narrow band channel to a receiver, which is equipped with a pseudo-random gating system identical in its selection pattern and synchronized with the pseudo-random selecting system in the transmitter. Because they have been transmitted over a narrow band channel the sample amplitude signals have lost their original identity in time and duration; they have been "smeared" or stretched in time. The synchronized gating system at the receiver reshapes the amplitude signal to its original duration and relative location in time, and applies it to a conventionally fast-scanned cathode ray tube, preferably with a long persistence screen. The pseudo-random selection pattern varies from one field scan to the next, so that a succession of field scans covers all the picture elements, and builds up the entire picture on the cathode ray tube at the receiver.

3,769,453
FINITE MEMORY ADAPTIVE PREDICTOR

Lalit R. Bahl, Yorktown Heights, N.Y.; Daniel I. Barnea, Tel Aviv, Israel; David O. Grossman, Yorktown Heights, and Hisashi Kobayashi, Mohegan Lake, both of N.Y., assignors to International Business Machines Coporation, Armonk, N.Y.

Filed Aug. 17, 1972, Ser. No. 281,359
Int. Cl. H04n 7/12
U.S. Cl. 178—6 6 Claims



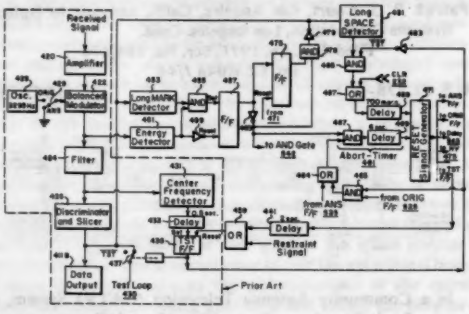
A system for compacting digital data by means of prediction error coding. Prediction for each unknown bit is a function of previous detected levels in the data stream. A plurality of *n*-bit up-down counters, each associated with one of the possible states of prediction for an unknown bit, is utilized to arrive at a prediction of the level of the unknown bit. If the value found in the up-down counter is above a pre-specified level, a prediction will be made that the unknown bit is a one, otherwise, the prediction is zero.

The predictor code output signals are summed modulo 2 with the actual signal value of the predicted bit in order to develop a prediction error pattern having a sparsity of ones. This error pattern is adaptable to run-length coding. After each prediction, the appropriate up-down counter is incremented or decremented depending on the actual value of the data bit that has been predicted so as to make future predictions adaptive to the previously coded data stream. The number of stages *n* is small so that the counters which control the predictions quickly adapt to changes in the nature of the actual information stream.

3,769,454
METHOD AND APPARATUS FOR TESTING TELETYPEWRITER TERMINALS

Richard A. Liberman, Stafford; William C. Bond, Norwalk, and Edwin J. Soltysiak, Westhaven, Conn., assignors to General Datacomm Industries, Inc., Norwalk, Conn.

Filed Nov. 1, 1971, Ser. No. 194,270
Int. Cl. H04l 5/14
U.S. Cl. 178—58 11 Claims



A method and apparatus are provided for the automatic testing of a data communication terminal and a data commu-

nication link to which the terminal is connected. A conventional data set or modem in the terminal to be tested is modified to permit the terminal to be inserted automatically into a test loop, to be switched from the answer (ANS) mode of operation to the originate (ORIG) mode, and to be returned to normal operation. Fail-safe operation is provided to remove the terminal from the test loop if a failure occurs; and a wide range of test functions can be exercised.

3,769,455

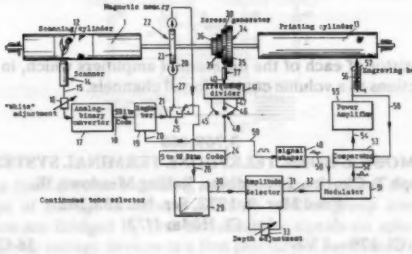
METHOD AND APPARATUS FOR MAKING HALF-TONE SCREEN PRINTING CYLINDERS

Ferdinand Allard De Vos, Castricum, and Jan Hendrik Ter Steege, Breukelen, both of Netherlands, assignors to N. V. Werkspoor-Amsterdam, Amsterdam, Netherlands

Continuation-in-part of Ser. No. 807,905, March 17, 1969, abandoned. This application Mar. 1, 1972, Ser. No. 230,649

Int. Cl. H04m *5/76, 1/06*

U.S. Cl. 178—6.6 B **13 Claims**



The depth of penetration of the electromagnetically driven engraving element of an engraving machine into the material to be engraved is regulated by controlling the electromagnetic driving system of the engraving element with the aid of alternating current and of direct current. The value of the direct current and also the amplitude of the alternating current are varied in dependence on the measured grey value of the required engraving and the engraving element is spring biased in the direction to penetrate into the cylinder being engraved. The alternating and direct current signals are combined to produce a combined signal in which the amplitude excursions opposing the biasing spring are clamped to a selected level at which the winding of the engraving assembly is saturated. The frequency of the ac signal is greater than the resonant frequency of the engraving assembly and the sum of the displacements of the engraving element in opposition to the biasing spring, which displacements are due respectively to the dc signal and to the ac signal, is a constant. The movement of the engraving element is in phase opposition to the current through the engraving assembly winding and the winding current effects saturation thereof at the point of maximum penetration by the engraving element.

3,769,456

METHOD AND SYSTEM FOR CENTROIDAL TV TRACKING

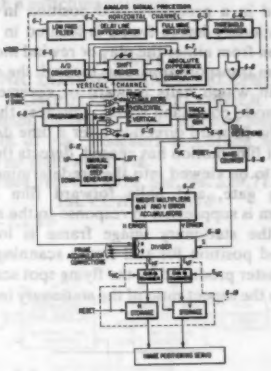
Martin G. Woolfson, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 21, 1972, Ser. No. 219,736

Int. Cl. H04n *7/18*

U.S. Cl. 178—6.8 **18 Claims**

A mechanization employing digital techniques locates and tracks the centroid of an image produced by television (TV) scanning techniques. The TV video signal is processed for changes in level, corresponding to contrast differences between an image and background, and all level changes are stored digitally with coordinate information related to vertical and horizontal positions. Each level change is weighted as a function of displacement from the coordinate axes and summed each scan frame to yield the mean of all level changes recorded. The image as a target is tracked by sensing, digitally,



the change of position of the image mean level-change, or centroid, in subsequent TV frames and providing positioning information to the TV camera tracking servomechanism so as to center the image on the TV display.

3,769,457

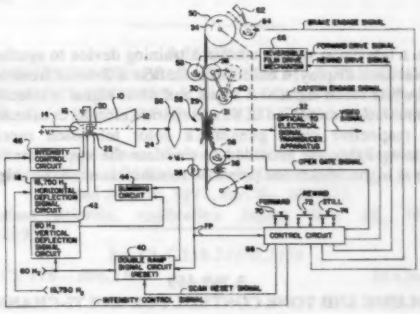
STOP-IN-FRAME METHOD AND APPARATUS FOR FILM VIDEO PLAYER

Harry L. Valenta, Jr., North Chili; William A. Martin, Fairport, and Lenard M. Metzger, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 27, 2972, Ser. No. 292,568

Int. Cl. H04n *5/36, 5/30*

U.S. Cl. 178—7.2 **10 Claims**



An electronic film video player for converting pictorial information in image frames on motion picture film into video signals for reproduction of the pictorial information as a video display. Film transport apparatus is operable in a play mode for continuously moving the motion picture film past a scanning gate in a forward direction. The image frames are scanned by a beam of light produced by a flying spot scanner of electrical to-optical signal transducer apparatus in a raster having a horizontal-to-vertical aspect ratio related to the aspect ratio of the image frames, and the continuous rate of movement of the motion picture film past the scanning gate. Optical-to-electrical signal transducer apparatus responds to the moving spot of light modulated in intensity by the pictorial

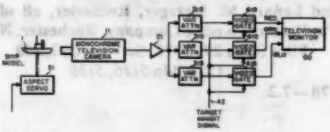
information content of the scanned image frames for producing video signals representative thereof. The film transport apparatus is alternately operable in a rewind mode for continuously moving the motion picture film in a reverse direction to rewind the motion picture film. The film transport apparatus is also operable in a still mode for scanning a stationary image frame located in a predetermined position in the scanning gate. The stationary image frame is located in the predetermined position from either the play or rewind modes of operation of the film transport apparatus through the operation of a control circuit which halts forward or reverse film motion upon a still mode command signal, advances the motion picture film in the forward direction after a time delay sufficient to ensure that film motion has ceased, detects the entry of the image frame to be viewed into the predetermined position in the scanning gate, and halts forward film motion. The scanning beam is suppressed in response to the still command signal until the stationary image frame is located in the predetermined position for still frame scanning. The aspect ratio of the raster produced by the flying spot scanner is made to conform to the aspect ratio of the stationary image frame.

3,769,458

COLOR ELECTRONIC SYNTHESIZER

Carl R. Driskell, Winter Park, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 23, 1972, Ser. No. 256,038
Int. Cl. H04n 9/02
U.S. Cl. 178—5.2 R **3 Claims**



In a television system used in a training device to synthesize a television display, a color presentation is derived from black and white video signals. A black and white signal is selectively attenuated or amplified in three separate circuits connected to the respective color guns in a color television receiver. Running lights are provided to simulate the appearance of a ship at night. Means are provided to simulate a missile ship.

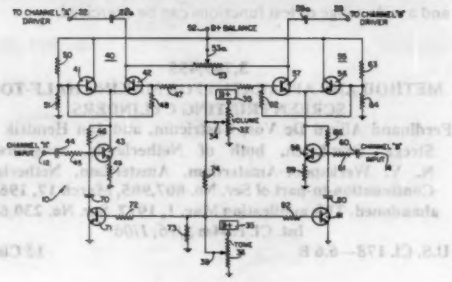
3,769,459

VOLUME AND TONE CONTROL FOR MULTI-CHANNEL AUDIO SYSTEMS

Paul J. Niffenegger, Des Plaines, and Ronald J. Freimark, Addison, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed July 20, 1970, Ser. No. 56,313
Int. Cl. H03j 5/04
U.S. Cl. 179—1 VL **4 Claims**

A single volume control for a plurality of audio channels is formed by a pair of gain controllable differential amplifiers operated as small-signal amplifiers in an open-ended configuration. The current source to each differential amplifier forms the signal path between the input and output of the volume control circuit. The transistor forming the current path, and signal path, is a class A amplifier. By altering the DC bias on one of the current control devices in each of the differential amplifiers, the amount of signal coupled to the output thereof is correspondingly varied. A single potentiometer provides a DC voltage control for the variable impedance to the selected transistor of each of the differential amplifiers which, in turn, functions as a volume control for all channels.

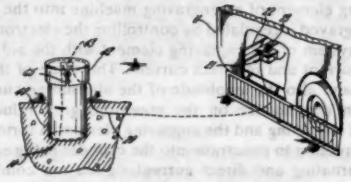


3,769,460

MOBILE HOME TELEPHONE TERMINAL SYSTEM

Joseph T. Charles, 2 Woodbine, Rolling Meadows, Ill.

Filed Mar. 9, 1972, Ser. No. 233,202
Int. Cl. H04m 1/72
U.S. Cl. 179—1 VE **16 Claims**



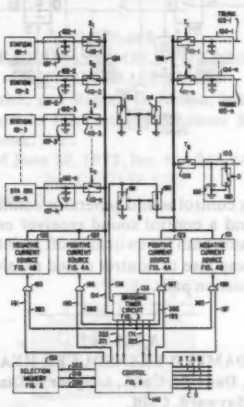
A mobile home telephone terminal system which includes a five-conductor cable having two pairs of conductors for connection to the conductors in a telephone service line and a fifth conductor for connection to grounding means. The fifth conductor is connected to the chassis of the mobile home for grounding purposes, with the connection being made via a terminal plate assembly which includes clamping means for mounting a terminal plate on a conductive portion of the chassis of the mobile home and for making electrical contact therewith. A standard telephone station protector may be mounted on the terminal plate on the mobile home. If the station protector is not mounted on the mobile home, due to access difficulties for example, the protector may be mounted at the opposite end of the five-conductor cable in a closure adapted to be partially buried and housing the connection between the five-conductor cable and the service line, with the terminal plate, without the protector, still being mounted on the mobile home chassis for use as a grounding and connection means. This closure also provides a convenient storage means for the five-conductor cable and the terminal assembly connected thereto when the corresponding service line is disconnected. The closure also includes means for connecting the grounding conductor to a grounding stake when it is desirable to do so.

3,769,461

TIME DIVISION SWITCHING SYSTEM BRIDGING CIRCUIT

Theras Gordon Lewis, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 3, 1972, Ser. No. 277,559
Int. Cl. H04j 3/12
U.S. Cl. 179—15 AT 12 Claims



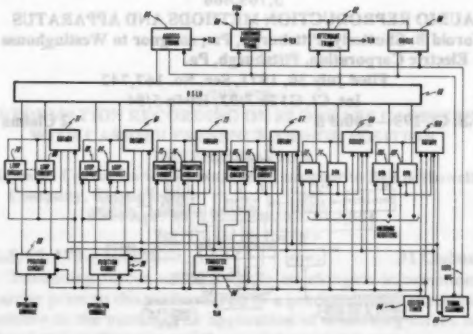
In a time division switching system having first and second groups of storage devices, a plurality of first group storage devices are bridged by first detecting the signals on selected first group storage devices in a first plurality of successive time slots in a cycle. The detected signals are summed and stored in a second group storage device during the first plurality of time slots. In each of a second group of successive time slots, a signal is applied to a selected first group storage device for a time corresponding to the difference between the sum signal and twice the selected first group storage device whereby the selected first group storage device receives the signals from all other selected first group storage devices.

3,769,462

PRIVATE AUTOMATIC BRANCH EXCHANGE SERVICE CIRCUIT COMPLEX

Stanley L. Russell, Webster; Klaus Gueldenpfennig, Penfield, and Uwe A. Pommerening, Webster, all of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,750
Int. Cl. H04m 3/00
U.S. Cl. 179—18 AD 14 Claims



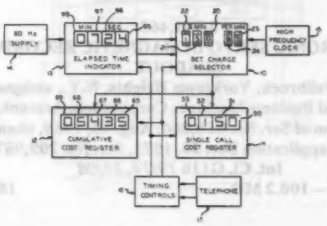
A service circuit complex used in a private automatic branch exchange for connecting any one of a plurality of various type trunks to various type service circuits, arranged in groups by type of service for servicing different type calls utilizes a common control arrangement for sequentially scanning the trunks for service requests and for applying signals to a trunk requesting service and the groups containing the type of service circuit requested for enabling the two to be interconnected through a switching network.

3,769,463

ELECTRONIC LONG-DISTANCE TELEPHONE CALL COMPUTER AND RECORDER

Philip G. Graham, Hollywood, and Lawrence Reich, West Hollywood, both of Fla., assignors to Lorbon Manufacturing Co., Inc., West Hollywood, Fla.

Filed Feb. 28, 1972, Ser. No. 229,711
Int. Cl. H04m 15/18
U.S. Cl. 179—7.1 TP 7 Claims



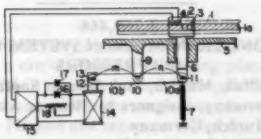
Apparatus for automatically computing and recording the cost of a long-distance telephone call including a call cost register for cumulatively indicating on a digital display the cost of a call being made and responding to a computer having an input of the cost data for the call and an input of the time period of the call wherein the computer and recorder operate automatically in response to signal information taken directly from the telephone. Additionally, an elapsed time indicator digitally displays the time period of the call and a cumulative cost register records and digitally displays the cost of all calls made.

3,769,464

METHOD AND APPARATUS FOR MAINTAINING ALIGNMENT BETWEEN A TAPE RECORDER HEAD AND A TRACK OF RECORDED MATERIAL ON A MAGNETIC TAPE

Sei Jinsenji, and Teruo Kawata, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Dec. 20, 1971, Ser. No. 209,522
Claims priority, application Japan, Dec. 26, 1970, 45/125932
Int. Cl. G11b 21/10, 5/58
U.S. Cl. 179—100.2 S 14 Claims



Apparatus and method whereby a magnetic reproducing head comprising a head element for controlling the vertical position of the head relative to a track of recorded material on a magnetic tape and a head element for reproducing the

recorded material and disposed on a pivotal lever maintained in a balanced position by the electromagnetic force of electromagnetic means and the biasing force of a spring can be kept in alignment with the track of recorded material at all times. A tracking error produces a change in the relative positions of the track of recorded material and the vertical position control head element and causes a magnetic variation to occur. The magnetic variation is detected by the vertical position control head element which accordingly controls the electromagnetic force of the electromagnetic means so as to bring the reproducing head back into alignment with the track of recorded material. When the magnetic tape used is an endless tape carrying multiple tracks of recorded material which are continuous with one another through an inclined track portion, it is possible to automatically switch the reproducing head from one track to another as the electromagnetic force of the electromagnetic means is increased when the position control head element is brought into alignment with the inclined track portion.

3,769,465

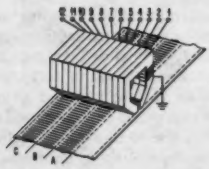
ELECTRONIC SERVO IN MAGNETIC RECORDING READOUT

Anton G. Wellbrock, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 850,860, Aug. 18, 1969, abandoned. This application Dec. 20, 1971, Ser. No. 209,987

Int. Cl. G11b *19/14, 21/08*

U.S. Cl. 179—100.2 MD **18 Claims**



In high-density recording, a slight lateral movement between an information track and a readout transducer will cause either a failure to read out information from the track or incorrect read out of information. Instead of moving a transducer to a position centered over the track, a plurality of transducers are in a fixed position, and electronic gating is used to select the transducer presently centered over the track to be readout. Transducers used herein are the conventional magnetic heads or the newer magneto-optic transducers which utilize photodiodes as a final sense element. The alignment between tracks and transducers is detected by a plurality of transducers which monitor a guard band on the magnetic recording surface. The transducers monitoring the guard band detect the lateral edge of recorded information. The tracks on the magnetic surface will be a fixed position relative to this lateral edge. The detection of the lateral edge then permits the selection of the transducers which will be centered over each track on the magnetic recording surface.

3,769,466

TELEPHONE TRANSMISSION SYSTEM WITH ECHO SUPPRESSORS

Dirsko Von Pfeil, Munich, and Johann Sontheim, Feldafing, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

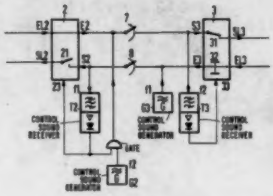
Filed Oct. 12, 1971, Ser. No. 187,989

Claims priority, application Germany, Oct. 14, 1970, P 20 50 462.5

Int. Cl. H04b *3/20*

U.S. Cl. 179—170.4 **3 Claims**

A telephone transmission system in which two transit time sections including speech circuits and respective echo suppressors are connected on a four-wire basis in an exchange which provides an echo suppressor for each of the connected circuits. The exchange is provided with apparatus for suprressing signals in the transmitting path including a switch off



device having a control sound generator connected to a transmission path and a control sound receiver connected to the other transmission path for switching off an intermediate echo suppressor in response to control sound received over the associated transmission path.

3,769,467

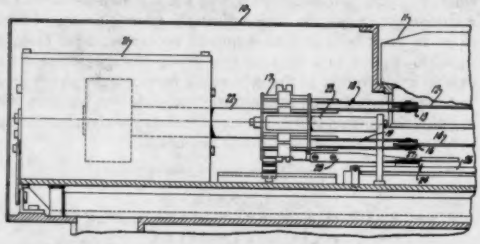
VIBRATION DAMPED TRANSDUCER HEAD ASSEMBLY

Andrew Gabor, Danville, Calif., assignor to Diablo Systems, Incorporated, Hayward, Calif.

Filed Feb. 14, 1972, Ser. No. 226,032

Int. Cl. G11b *5/56, 25/04*

U.S. Cl. 179—100.2 CA **6 Claims**



A vibration damped transducer head assembly where the head is cantilevered from a movable carriage and includes an elongated overhanging weight of metal which is affixed to the transducer head by energy absorbing material.

3,769,468

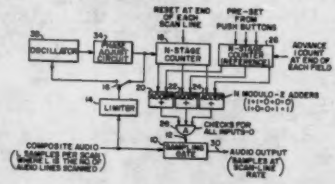
AUDIO REPRODUCTION METHODS AND APPARATUS

Harold B. Shutterly, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 30, 1971, Ser. No. 167,742

Int. Cl. G11b *7/02;* **H04n** *5/84*

U.S. Cl. 179—100.3 B **2 Claims**



Methods and apparatus for reproducing audio information wherein the information is provided on a medium, such as

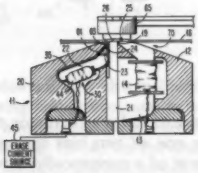
paper, in the form of encoded audio lines wherein these lines are scanned to reproduce the audio information therein. Also provided is method and apparatus of producing the audio information from a particular preselected audio line of a field array of audio lines in response to the preselection of this line.

3,769,469

TRIM ERASE HEAD ASSEMBLY FOR PROVIDING A UNIFORM ERASE FIELD

Michael F. Garnier, and Roland D. Nelson, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 28, 1972, Ser. No. 266,947
Int. Cl. G11b *5/22*
U.S. Cl. 179—100.2 D **16 Claims**



A magnetic recording transducer assembly including an erase core assembly for erasing the edges of a newly written track immediately after it is written by a write transducer is disclosed. The erase assembly comprises an erase core member and a coil. The core member comprises a flexible strip of magnetic material, each end of the strip having first and second parallel leg portions spaced apart a distance corresponding to the desired width of the track after erasure. A housing positions the core member in operating relationship to the write transducer. Additional means fixes the core member relative to the housing to maintain the first and second leg portions of the core member in parallel relationship for a throat height distance which is less than the length of the legs and to maintain the width of erase gaps such that the erase flux field is substantially uniform over a range of current above the minimum required to saturate the core in the throat height region. The housing has a first surface adapted to be positioned in a recording relationship to the track. The core is bent to position the ends of the strip normal to the plane of the first surface in spaced apart relationship whereby the legs define erase gaps in the first housing surface for erasing the edges of the track.

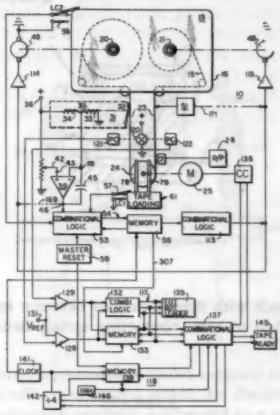
3,769,470

INFORMATION RECORDING ON ELONGATE CARRIERS WITH CARRIER PRESENCE AND/OR POSITION DETERMINATION

Brian K. Curtis, La Crescenta, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Apr. 10, 1972, Ser. No. 242,554
Int. Cl. G11b *15/16*
U.S. Cl. 179—100.2 S **31 Claims**

Tensioning forces are applied to an elongate information carrier prior to the performance of a predetermined function relative to the carrier. The application of tensioning forces is timed and performance of the predetermined function is only initiated if a tensioning of the elongate information carrier occurs within a predetermined time. A determination of the carrier position preparatory to the performance of a desired function may be effected by sensing whether the beginning, and end, or another portion of the carrier is located at a function performing station. In response to this determination the information carrier is operated until its beginning is located at the station.

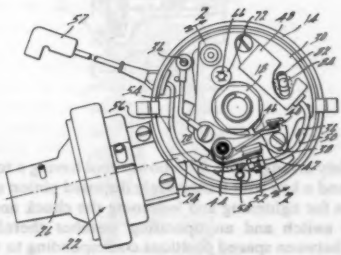


3,769,471

DISTRIBUTOR BREAKER PLATE ASSEMBLY

Garry E. Beard, Livonia, Mich., assignor to Ford Motor Com-.pany, Dearborn, Mich.

Filed July 21, 1971, Ser. No. 164,731
Int. Cl. H01h *19/62*
U.S. Cl. 200—31 **8 Claims**



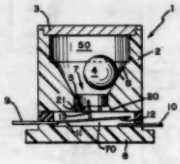
A breaker plate assembly for an ignition distributor includes a base plate and a circuit breaker mounting plate. A link is pivotally connected to the base plate at one point on the link and is pivotally connected to the mounting plate at another point on the link. Pin and slot means associated with the base plate and mounting plate control movement of the mounting plate relative to the base plate. A set of circuit breaker contact points actuated by a cam follower is attached to the mounting plate. Because of the structure used, the cam follower moves concentrically with respect to a rotatable cam that actuates the cam follower. Concentric movement of the cam follower maintains the ignition dwell time substantially constant during advancement and retardation of the ignition timing.

3,769,472

INERTIA SENSOR SWITCH

Lon E. Bell, and William P. Gruber, both of Altadena, Calif., assignors to Technar Incorporated, Pasadena, Calif.

Filed Aug. 23, 1972, Ser. No. 283,241
Int. Cl. H01h *35/02*
U.S. Cl. 200—61.45 R 8 Claims



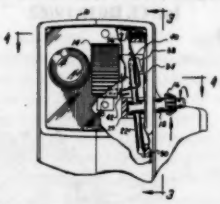
Inertia switch with mass mounted between inclined structure and, when at rest, contacting spring switch extension means.

3,769,473

POWER TOOL SAFETY LOCK DEVICE FOR MANUAL SWITCH WITH SWITCH ACTUATOR INTERLOCK STRUCTURE DEFEATEDLY RELEASED BY CHUCK KEY

Michael T. Lay, West Chicago, Ill., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Nov. 21, 1972, Ser. No. 308,417
Int. Cl. H01h *27/06*
U.S. Cl. 200—61.58 R 4 Claims



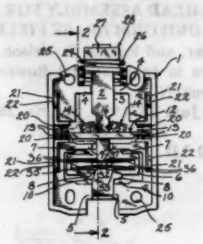
A safety arrangement for a power tool having a tool holding chuck and a key with transversely disposed pinion and handle portions for tightening and loosening the chuck and having a control switch and an operating member therefor that is shifted between spaced positions corresponding to the on and off conditions respectively of the power tool, the combination of the tool casing having a slot adjacent the switch which slot is adapted to receive the key handle portion with the pinion portion then being exposed, a casing wall located adjacent the slot allowing rotation of the inserted key in one direction only, a leaf spring supported by the casing with a cantilevered portion located adjacent the positioned key handle portion and further having a tab formed on the spring and located adjacent the operation member, the spring tab operating under the normal bias of the spring when no key is in the unit to interfer with the operating member thereby precluding shifting of same from the off position to the on position, and the key handle portion operating when positioned in the slot and upon key rotation to displace the spring tab from interference with the operating member thereby allowing shifting of the operating member for desired operation of the power tool.

3,769,474

CONTACT PRESSURE SUSTAINING SWITCH

Justin A. Deubel, Franklin, and Edward H. Kuhn, Milwaukee, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed No. 29, 1971, Ser. No. 202,759
Int. Cl. H01h *15/18*
U.S. Cl. 200—76 10 Claims



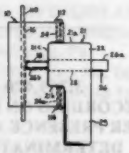
A snap-action switch includes an actuator, the movement of which initially loads one of two bias springs and thereafter produces advancement of a reciprocally movable toggle bar. A toggle spring is positioned between the toggle bar and a movable contact spanner, which toggle spring acts to apply contact closing pressure and also to resist advancement of the toggle bar until it is overcome by the loaded bias spring. At this point in operation the toggle bar is rapidly advanced through and past toggle center, to accomplish a snap-action of the toggle spring forcing the movable contact member out of engagement with one pair of contacts and into engagement with a second pair of contacts, and such snap-action occurs without diminution of contact pressure to dangerously low values.

3,769,475

PNEUMATIC BREAK DETECTOR SENSOR

Bert John Czwakiel, Schenectady, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Oct. 21, 1971, Ser. No. 191,306
Int. Cl. B65h *25/14*; G01b *13/00*
U.S. Cl. 200—81.9 6 Claims



A pneumatic break detector sensor for detecting a break in a stranded material during its manufacturing process including a sensor head having a V-grooved slot through which the strand passes and to the center of which pressurized air is supplied, the pressurized air exiting through a sensing hole provided in the center of the V-grooved slot, and the back pressure level of the supplied air being sensed to provide an indication of a break in the strand of material.

3,769,476

SWITCH DEVICE FOR INDICATING PRESENCE OF A LOAD ON THE SEAT OF AN AUTOMOTIVE VEHICLE

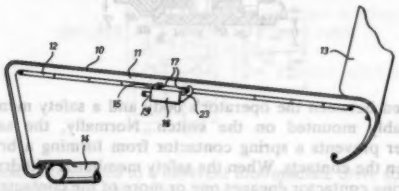
Dieter Eberle, Tamm, Wurttemberg; Dieter Hanselmann, and Hans Prohaska, both of Bietigheim, Wurttemberg, all of Germany, assignors to SWF-Spezialfabrik Fur Autozubehor Gustav Rau GmbH, Postfach, Bietigheim, Germany

Filed Apr. 13, 1972, Ser. No. 243,672

Claims priority, application Germany, Apr. 20, 1971, G 71 14 939.8

Int. Cl. H01h *3/14*

U.S. Cl. 200—85 A 5 Claims



The switch device is used with a resilient automotive vehicle seat having a spring suspension, and is in the form of a pull switch having a housing and an actuating member movable relative to the housing. Hooks on the housing and on the actuating member connect the pull switch between two points on a part of the spring suspension which expands when the seating surface of the seat is loaded. Clamps may be provided to secure the hooks against displacement along the spring suspension part.

3,769,477

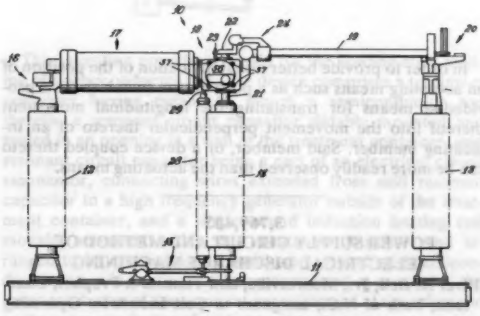
SWITCH OPERATING MECHANISM

Leonard V. Chabala, Maywood, and Edward J. Rogers, Chicago, both of Ill., assignors to S & C Electric Company, Chicago, Ill.

Filed Sept. 18, 1972, Ser. No. 290,177

Int. Cl. H01h *33/12*

U.S. Cl. 200—146 R 20 Claims



Main and auxiliary contact operating rods are sequentially moved to contact open positions by coil tension springs on the sequential tripping of main and auxiliary toggle latches by a mechanism cam on an operating shaft pivoted in one direction. Continued pivoting of the operating shaft in the same direction effects movement of the rods to the contact closed positions. The toggle latches can be tripped sequentially independently of the mechanism cam. An indicator operated in conjunction with the main contact operating rod provides a visible indication of the position of the operating rod and thereby of the contacts.

3,769,478

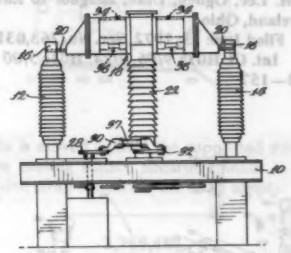
ISOLATING CIRCUIT BREAKER AND OPERATING MECHANISM THEREFOR

Donald E. Weston; Raymond F. Kupetis, and Demetrius Karathanos, all of c/o H. K. Porter Company, Inc., 2437 Fulton St., Chicago, Ill.

Filed Mar. 1, 1971, Ser. No. 119,511

Int. Cl. H01h *33/12*

U.S. Cl. 200—146 R 16 Claims



A rotary disconnect switch includes separate main contacts and vacuum contacts mounted within the disconnect switch. A remote mechanical operator connected to a power device serves to close and open the disconnect, main and vacuum contacts in a particular ordered sequence. The operator also includes a latched spring driver to assure rapid closing of the contacts in sequence.

3,769,479

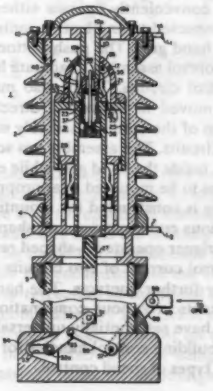
PUFFER-TYPE COMPRESSED-GAS CIRCUIT INTERRUPTER WITH DOUBLE-FLOW ACTION

Winthrop M. Leeds, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 28, 1972, Ser. No. 248,476

Int. Cl. H01h *33/70*

U.S. Cl. 200—148 A 9 Claims



A puffer-type compressed-gas circuit interrupter is provided having a movable cylinder movable with the movable contact structure, and being provided with a hollow contact follower disposed within the moving contact structure. The hollow contact follower has a lost-motion connection with the movable contact structure, and maintains abutment and a blocking of the gas flow with the hollow stationary contact until a predetermined time, thereby blocking the venting action, and permitting a pre-compression of the gas.

Further opening motion of the movable cylinder and the movable contact structure pulls the hollow contact follower away from the hollow stationary contact, and provides a double-flow venting action through both the stationary hollow contact and also the moving hollow contact.

3,769,480

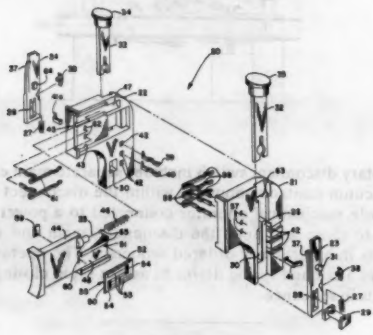
HOIST ELECTRIC CONTROL HANDLE WITH FIRST OPERATING MEANS, INCLUDING A MOVABLE S-SHAPED RESISTOR, AND SECOND OPERATING MEANS

Kirkwood M. Lee, Ogden, Utah, assignor to Eaton Corporation, Cleveland, Ohio

Filed June 15, 1972, Ser. No. 263,031

Int. Cl. H01h *9/06, 9/24;* **H01c** *5/00*

U.S. Cl. 200—157 **17 Claims**



A pendant electric control handle for a power operated hoist comprises molded plastic side portions of complementary shapes, that are assembled to form a hand grip extending in a downwardly directed longitudinal axis and an inner control chamber within the hand grip. An outer surface of the hand grip offers clearance for an angular position of the thumb of a hand whose fingers encircle the hand grip, in which position the thumb may conveniently operate either of two push buttons that are connected to an electric control assembly in the chamber of the hand grip. The push buttons then are utilized to operate the control assembly to actuate lifting and lowering directional control circuits. There also may be a trigger in position to be moved in horizontal direction by finger for further actuation of the control assembly so as to control one or more speed circuits. The assembly has somewhat the shape of an inverted L inside the hand grip while enabling the trigger and push buttons to be mounted in appropriate positions. The control assembly is constructed for mounting current control elements in various combinations and shapes, including fixed contacts and a trigger operated S-shaped resistor that will proportionally control current of two circuits while requiring no flexible leads or further contacts. The handle can mount resistors and contacts in various combinations that enable the construction to have substantially universal utility and reducing costs when building control handles for hoists that require widely differing types of speed control.

3,769,481

COMBINED ELECTRICAL CONTROL AND SAFETY SWITCH FOR VEHICLES

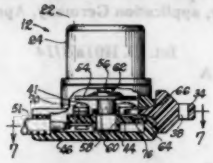
Andrew F. Raab, Morton Grove, Ill., assignor to Indak Manufacturing Corp., Northbrook, Ill.

Filed May 10, 1972, Ser. No. 252,310

Int. Cl. H01h *17/10, 27/04*

U.S. Cl. 200—161 **3 Claims**

The illustrated push-button switch comprises fixed contacts which are adapted to be connected together by a contactor operated by the push button. The switch may be employed to short circuit the ignition of a vehicle engine so as to stop the engine. The switch has the additional function of automatically stopping the engine if the operator falls off the vehicle. To accomplish this additional function, a cord or the like is



provided between the operator's body and a safety member removably mounted on the switch. Normally, the safety member prevents a spring contactor from forming a bridge between the contacts. When the safety member is withdrawn, the spring contactor engages one or more of the contacts and closes the circuit therebetween so as to stop the engine.

3,769,482

PUSH BUTTON SWITCH WITH INDICATOR

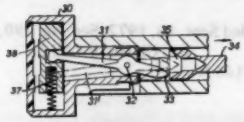
William Ernest New, Chichester, and Alan David Parmenter, Burgess Hill, both of England, assignors to Rendar Instruments Limited

Filed June 29, 1972, Ser. No. 267,416

Claims priority, application Great Britain, July 1, 1971, 30,792/71

Int. Cl. H01h *9/16*

U.S. Cl. 200—167 R **1 Claim**



In order to provide better visual indication of the position of an actuating means such as a push button switch there is provided a means for translating the longitudinal movement thereof into the movement perpendicular thereto of an indicating member. Said member, or a device coupled thereto can be more readily observed than the actuating means.

3,769,483

POWER SUPPLY CIRCUIT AND METHOD OF ELECTRICAL DISCHARGE MACHINING

Oliver A. Bell, Jr., Mooresville, and Thomas I. Prophet, Charlotte, both of N.C., assignors to Colt Industries Operating Corp., New York, N.Y.

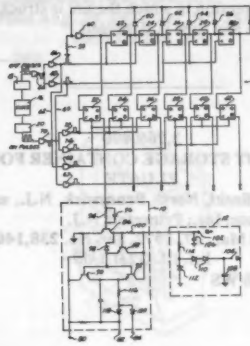
Filed May 25, 1972, Ser. No. 256,836

Int. Cl. B23p *1/08*

U.S. Cl. 219—69 C **4 Claims**

A number of output electronic switches are included in the circuit, all having their principal or power conducting electrodes connected in parallel between a common terminal of a main machining power supply and the gap. A system is included for sequentially triggering the output switches into conduction and then repeating the process to provide a continuous train of machining power pulses to the gap. The system includes a set of "on" time control flip-flops arranged in shift register configuration and a corresponding set of "off"

time control flip-flops likewise arranged in shift register configuration. The outputs from the "on" time control flip-flops



are each connected to a different intermediate drive stage for providing the sequential time-spaced operation of each of the output switches.

3,769,484

APPARATUS AND METHOD FOR FLOATING-ZONE MELTING OF A SEMICONDUCTOR ROD

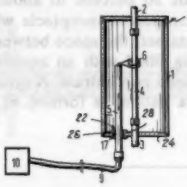
Hans Stut, Grobenzell, and Wolfgang Keller, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 10, 1972, Ser. No. 279,482

Claims priority, application Germany, Aug. 17, 1971, P 21 41 188.1

Int. Cl. H05b 5/06

U.S. Cl. 219—10.57 **12 Claims**



This invention provides a device for the floating-zone melting of a semiconductor rod. The device comprises a treatment container having means to mount a semiconductor rod therein, a resonant circuit capacitor slidably mounted and sealed in an opening in a wall of the treatment container, said resonant circuit capacitor being a part of an electrical circuit resonantor, connecting wires extended from said resonant capacitor to a high frequency generator outside of the treatment container, and a single-wound induction heating coil movably mounted within said treatment container and arranged to be concentrically positioned around said semiconductor rod, said heating coil being connected at one end to the inner conductor of the resonant capacitor and at the other end to the outer conductor of said capacitor.

3,769,485

STEEL STRAP WELDING APPARATUS FOR USE IN AN AUTOMATIC STRAPPING MACHINE

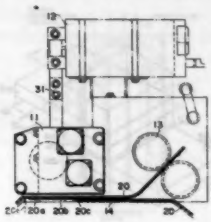
Hiroshi Harada, Kudamatsu-shi, and Teruji Sakurada, Osaka-shi, both of Japan, assignors to Toyo Kohan Co., Ltd. and Toa Seiki Co., Ltd., both of Tokyo, Japan

Filed Dec. 15, 1971, Ser. No. 208,194

Int. Cl. B23k 11/10; B65b 13/24

U.S. Cl. 219—56 **3 Claims**

In a steel strap welding apparatus for an automatic strapping machine, including a head having aligned welding, clamping and cutting stations. A support electrode is movable under overlapped strap ends to be welded simultaneously with application of clamping pressure in the clamping station. A pres-



sure electrode is moved against the supported strap ends and thereafter the cutting station shearing means is actuated to sever the welded strap ends from the strap supply.

3,769,486

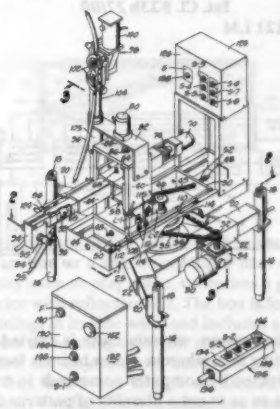
AUTOMATIC DREDGE PUMP REBUILDER

Theodore C. Braucht, Fountain Valley, Calif., assignor to D & W Rankin Manufacturing Company, Alhambra, Calif.

Filed May 1, 1972, Ser. No. 249,342

Int. Cl. B23k 9/04

U.S. Cl. 219—76 **38 Claims**



To rebuild the interior of a shell of a volute-type centrifugal dredge pump, a radial arm carrying a welding torch swings about the axis of the shell to repeatedly traverse the interior of the shell and automatically shifts the welding path at the end of each traverse. The radial arm advances or retracts radially as it rotates to follow the eccentricity of the volute configuration. The advance or retraction of the radial arm in response to its rotation is accomplished by a sprocket chain that walks around the periphery of a fixed sprocket on the axis of rotation, the diameter of the fixed sprocket being selected in accord with the eccentricity of the volute configuration.

3,769,487

METHOD FOR WELDING MANGANESE ALLOYS

Henry Ty, Attleboro, Mass., and John Baptista, Pawtucket, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

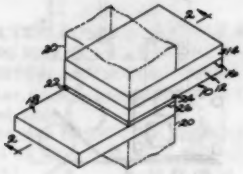
Filed Oct. 27, 1971, Ser. No. 193,050

Int. Cl. B23k 11/20

U.S. Cl. 219—104 **7 Claims**

A method for welding alloys of high manganese content to avoid the development of weld flash is shown to comprise the

steps of resistance welding the manganese alloy under conditions of temperature and pressure which are adequate for forcibly expelling manganese oxide from the surface of the alloy. The resistance welding is performed while a thin layer of



tin is disposed at the weld location, the tin being melted but remaining fluid without significant vaporization thereof at the welding temperature for restraining expelled manganese oxide at the extremities of the weld location to prevent the formation of weld flash.

3,769,488

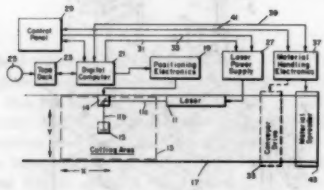
WORKLOAD ALLOCATION FOR ONE OR MORE TOOLS IN A LASER CLOTH CUTTING SYSTEM

Robert L. Hasslinger, Simi, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 19, 1972, Ser. No. 218,958

Int. Cl. B23h 27/00

U.S. Cl. 219—121 LM **14 Claims**



A cloth cutting system wherein cloth is carried in a single layer into a cutting area wherein a laser beam is focused on the cloth and is directed by computer commands to travel within the cutting area so as to cut a plurality of patterns through the cloth rapidly and accurately.

3,769,489

WELDING OF TUBES TO TUBE PLATES

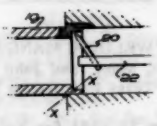
Eric Charlesworth, Sheffield, England, assignor to Robert Jenks & Company Limited, Rotherham, England

Filed Dec. 29, 1971, Ser. No. 213,630

Claims priority, application Great Britain, Jan. 12, 1971, 1,471/71

Int. Cl. B23k 9/12

U.S. Cl. 219—125 R **6 Claims**



A method of welding tubes to tube plates of heat exchangers, including a weld preparation which involves counterboring the end of each tube either before or after it is entered into a hole in the tube plate so that the molten "pool" of metal during the subsequent welding operation is as small as possible and so that the direction in which the arc is struck between the welding electrode and tube is stabilised.

3,769,490

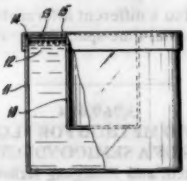
TRANSPARENT STORAGE CONTAINER FOR TC-99M ELUATE

Thomas V. Czaplinski, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 27, 1972, Ser. No. 238,140

Int. Cl. G21f 5/00

U.S. Cl. 250—108 WS **5 Claims**



A storage vessel for a reaction vial containing Tc–99m eluate comprises either a transparent leaded glass vessel having a thickness of from about 0.3 cm to about 2.5 cm and a lead content of from about 30 percent to about 65 percent by weight or an inner transparent receptacle which fits into an outer transparent container, the space between the inner and outer containers being filled with an aqueous, substantially saturated solution of lead perchlorate. A syringe for injecting Tc–99m eluate into a patient is formed of leaded glass as above.

3,769,491

PRODUCTION OF AN IMPROVED NON-AUSTENITIC STEEL WELD DEPOSIT

William T. De Long, and Edwin R. Szumachowski, both of Pittsburgh, Pa., assignors to Teledyne Inc., Los Angeles, Calif.

Division of Ser. No. 850,631, Aug. 15, 1969, Pat. No. 3,627,574. This application May 6, 1971, Ser. No. 142,022

Int. Cl. B23k 9/00

U.S. Cl. 219—137 **18 Claims**

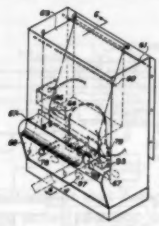
A method of producing an improved non-austenitic steel weld deposit characterized by superior toughness in the Charpy V-notch impact test by melting a covered ferrous low hydrogen arc welding electrode consisting of a current conductive core and a lime-fluoride coating, which method consists of proportioning the core and coating components containing metallic and oxide forms of the basic metals of the group consisting of lithium, sodium, potassium, cesium, magnesium, calcium, strontium and barium and of the acid metals of the group consisting of aluminum and silicon so that when all components are melted together under the influence of an electric arc they produce a weld metal deposit and a welding slag with a basicity or mole ratio of oxide of basic metal to oxide of acid metal of at least 2.2 and restricting the sources of metallic and oxide forms of titanium in the core and coating components so that the weld metal deposit contains less than 0.07 percent titanium.

3,769,492

AUTOMOBILE CIGARETTE CASE WITH AN AUTOMATIC ELECTRICAL LIGHTER

Alexander M. Senkewich, New York, N.Y.

Filed Aug. 29, 1972, Ser. No. 283,266
Int. Cl. F23q 7/00
U.S. Cl. 219—262 3 Claims



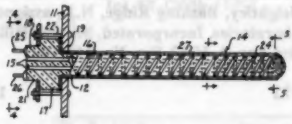
An automatic cigarette lighter for use on automobiles including a storage case for cigarettes, an electrical heater for lighting the end of a cigarette, and circuit means for operating the lighter which are immune to mechanical vibration and centrifugal force.

3,769,493

ELECTRIC IMMERSION HEATER ASSEMBLY

Edward J. Zeitlin, Purdys, and Lee Leighton, Mohegan Lake, both of N.Y., assignors to Edward J. Zeitlin, New York, N.Y.

Division of Ser. No. 161,596, July 12, 1971, Pat. No. 3,707,618. This application Sept. 11, 1972, Ser. No. 287,635
Int. Cl. H05b 1/00
U.S. Cl. 219—335 4 Claims



An electric immersion heater assembly for hot water heating boilers provided as a single phase circuit with a central conductive reinforcing rod that is utilized as one electrode and a ceramic body surrounding said rod with a resistance heating wire spirally wound upon said ceramic body and connected at its other end with a second electrode, said electrodes extending out of the heater at the unimmersed end and said immersed portion glazed with a non-conductive coating.

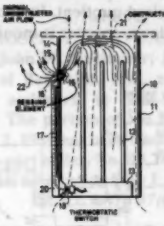
3,769,494

OVERHEATING PROTECTION ARRANGEMENT IN AN ELECTRIC SAUNA UNIT

Sven Olof Janson, Fredagsgrand 13, Halmsted, Sweden

Filed Feb. 7, 1972, Ser. No. 223,926
Claims priority, application Sweden, Feb. 8, 1971, 1531/71
Int. Cl. H05b 1/02; F24h 3/00
U.S. Cl. 219—363 4 Claims

In an electric sauna unit having an air passage which is open at bottom and top through which air flows during normal operation and in which electric heating elements are located there is provided an opening in the wall of the passage in the upper portion of the air passage. During normal operation cool air flows through the opening from the outside to the inside of the air passage, but if the air passage is obstructed the flow of heated air will leave the air passage through said opening. A sensing element operatively connected to a thermostatic switch controlling the supply circuit of the heating elements is located to sense the temperature of air passing through the opening and to actuate the thermostatic switch at a predetermined temperature in order to interrupt the supply circuit.

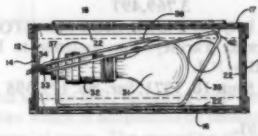


3,769,495

ELECTRIC HEATING DEVICE

John B. Orfei, Revere, Mass., assignor to American Science & Engineering, Inc., Cambridge, Mass.

Filed Oct. 29, 1971, Ser. No. 193,721
Int. Cl. H05b 1/00
U.S. Cl. 219—433 3 Claims



An electric heating device, which may be used to heat rocks that may function as a source of stored heat or may also be used as a play oven or play stove, comprises a paper box lined on the interior with reflective foil. The box is formed with ventilation openings in its side walls and includes a removable top provided with an opening in which is seated an aluminum foil tray in which the object to be heated is placed. Positioned within the box below the tray is an electric light bulb for providing heat. The light bulb is seated in a socket carried by a wire support. The wire support is a single piece of wire formed with a pair of base legs resting on the box bottom and an inverted V portion extending upwardly from the base legs and formed with a loop above the V for accommodating the socket stud.

3,769,496

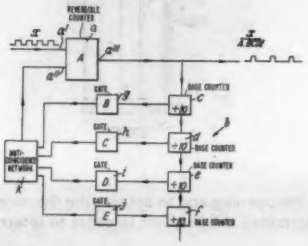
DIGITAL PROCESSING SYSTEM

Alan M. Thompson, Rotherham, and Clement V. Gregg, Huddersfield, both of England, assignors to Goulder Mikron Limited

Filed Mar. 6, 1972, Ser. No. 232,022
Claims priority, application Great Britain, Mar. 16, 1971, 7,041/71
Int. Cl. H03k 21/00
U.S. Cl. 235—92 DM 8 Claims

Digital processing systems are described for obtaining a quotient by dividing the pulse count of a source train of electrical pulses by a selected number having a non-integral portion, i.e., a portion .BCDE where the selected number is A.BCDE. In one embodiment, an output from an up-down counter for dividing by the integral number portion A. is monitored by a cascade arrangement of base or radix counters

each of which has a selectively settable gate through which feed-back pulses are applied to an up-counting input of the up-down counter, the gates being set according to the integers .BCDE in the non-integral portion of the selected number. Thus, the output from the up-down counter is regularly corrected to give the required quotient. In another embodiment, the output of the up-down counter is monitored by a pre-set



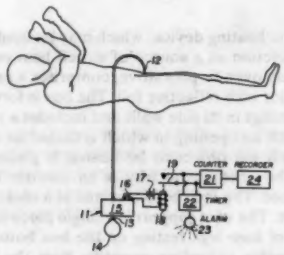
register containing the integers of the non-integral number portion and an active register from which each over-flow is applied to the up-counting input of the up-down counter. The active register enters and adds successively the contents of the pre-set register on the occurrence of each pulse at the output of the up-down counter. Practical applications, using either embodiment, are described, namely gear testing apparatus and a variable ratio transmission.

3,769,497

URINE LIQUID DISCHARGE MONITOR

Ulrich Anton Frank, Yardley, Pa., assignor to Hoffman-La Roche Inc., Nutley, N.J.

Filed Sept. 10, 1971, Ser. No. 179,395
Int. Cl. H03k 21/34
U.S. Cl. 235—92 FL 5 Claims



A bio-medical device for monitoring liquid output, comprising a receptacle adapted to be dumped each time it is filled with a critical volume, a sensor for generating an output signal with each dumping operation, and a counter responsive to the output signal to provide a total volume count.

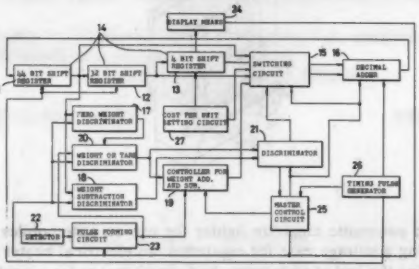
3,769,498

SYSTEM FOR CONTROLLING A COMPUTING SCALE

Masamichi Hino, and Iwao Hara, both of Osaka, Japan, assignors to Kubota Tekko Kabushika Kaisha (Kubota, Ltd.), Osaka, Japan

Filed Oct. 22, 1971, Ser. No. 191,610
Int. Cl. G01g 19/413; G06f 7/38
U.S. Cl. 235—151.33 4 Claims

A controlling system for a computing scale. The system has a circulating register formed in a series having desired figure of desired bits. An input signal selecting and changing circuit is connected to the circulating register, and a decimal adding circuit is connected to the input signal selecting and changing circuit. The circulating register, input signal selecting and changing circuit and decimal adding circuit form an amount cost counting means which is operated according to input signals of weight and unit cost. The circulating register has an intermediate terminal at a predetermined position thereof, a zero weight discriminating circuit and a weight subtraction discriminating circuit which are connected to the intermediate terminal of the circulating register. A weight and packing discriminating circuit and a displaying means are provided, the



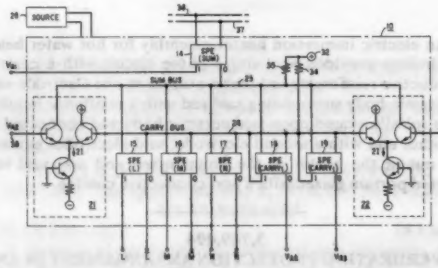
operation of the weight and packing discriminating circuit being changed correspondingly to output signals from the zero weight discriminating circuit and from the weight subtraction discriminating circuit. The contents thereof are memorized in the circulating shift register. A calculating operation of the cost is performed within the circulating shift register synchronized with a timing pulse by the amount cost counting means, and the contents of a certain range of the circulating shift register are displayed by the displaying means.

3,769,499

THRESHOLD LOGIC THREE-INPUT ADDER

John Donnell Heightley, Basking Ridge, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 4, 1972, Ser. No. 240,954
Int. Cl. G06f 7/50, 7/385
U.S. Cl. 235—172 10 Claims



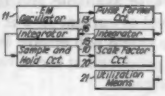
The invention is a threshold logic three-input adder circuit comprising a combination of storage-processor elements. These elements are each arranged to decide which one of a pair of double-rail input signals has a higher potential and to store the result of that decision. Information stored in each element directs a unit of current through one or the other of two busses for summation and determination of the potentials of the busses. Current steering circuits responsive to the potential on a first one of the busses steer four, two, or no units of current through a second one of the busses. Carry and sum elements compare the potentials of the first and second busses with predetermined reference potentials to determine whether to store "1s" or "0s" resulting from the summation of the input signals.

3,769,500

FUNCTION GENERATOR AND COMPONENTS THEREOF

Gerald Lance Schlatter, Boulder, Colo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 124,070, March 15, 1971. This application June 16, 1972, Ser. No. 263,416
Int. Cl. G06g 7/18, 7/26, 7/57
U.S. Cl. 235—197 8 Claims



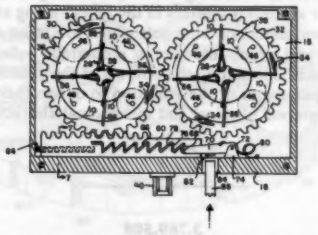
A vibration densitometer that computes and transmits the difference between actual density and a known, constant reference density. A pulse former circuit produces a pulse train useful in producing a linear density difference analog. Two integrators and one sample and hold circuit are employed in the computation. A single one shot actuates both integrators and the sample and hold circuit. A scale factor circuit is employed for calibration and to convert the difference analog to an analog of absolute density. The difference density analog makes possible the computation and transmission of density data with an extraordinarily high degree of accuracy. However, the difference density analog is produced with a very small, unique system.

3,769,501

SELECTIVE ACTUATING MECHANISM FOR PERCUSSIVE PHOTOFLASH LAMP ARRAY

Thomas B. McDonough, Allenwood, Pa., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Jan. 2, 1973, Ser. No. 320,007
Int. Cl. G03b 15/02
U.S. Cl. 240—1.3 18 Claims



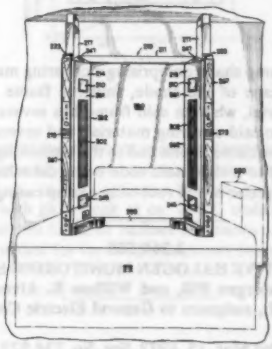
For a photoflash assembly comprising a plurality of percussively-ignitable flashlamps arranged in an array with respectively associated reflectors and preenergized striker springs, a self-energized selective actuating mechanism for sequentially releasing the striker springs to fire respective flashlamps in response to successive indexing. The actuating mechanism includes a coplanar train of intermeshing spur gears having a number of circumferentially spaced projecting ramps. The lamps and striker springs are supported on the end surfaces of shafts upon which the gears are mounted, with the strikers radially projecting over the surrounding gear to lie in the path of travel of the ramps. A spring-loaded, sliding rack gear is enmeshed with one of the spur gears and is position-controlled by a spring-loaded, pivoted arm having a pin engaging a sawtooth slot cam in the rack gear. To flash a lamp, the pivoted arm is raised so that the cam-engaging pin clears a vertical portion of the sawtooth slot and thereby releases the spring-loaded rack gear to rotationally index the gears while the cam-engaging pin rides down a ramp portion of the sawtooth slot. The gear indexing permitted by the pitch of the sawtooth slot causes one of the ramps to release a striker.

3,769,502

HOSPITAL SERVICE UNIT

John R. Schultz; John W. Heidacher; John M. Sharer; James S. Adams, all of Batesville, Ind., and Frank M. Damico, Plover, Wis., assignors to Hill-Rom Company, Inc., Batesville, Ind. The portion of the term of this patent subsequent to May 2, 1989 has been disclaimed.

Continuation-in-part of Ser. No. 83,762, Oct. 26, 1970, Pat. No. 3,660,591. This application May 1, 1972, Ser. No. 249,226
Int. Cl. A47b 97/00
U.S. Cl. 240—4 42 Claims



A hospital service unit, equipped with electrical and patient care facilities which is adapted to be mounted upon the headwall of a hospital room. The mounting of the module is simply accomplished and after the module is secured on the wall, the electric and gas leads are connected externally of the enclosure to complete the installation.

3,769,503

LAMP FIXTURE HAVING DICHORIC FILTER ARRANGEMENT FOR SELECTIVELY DIRECTING HEAT AND LIGHT

Sang-Chul Kim, Cleveland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 117,484, Feb. 22, 1971, abandoned. This application June 23, 1972, Ser. No. 265,444
Int. Cl. F21l 15/02
U.S. Cl. 240—41.34 R 5 Claims

A fixture for a lamp which emits both light and heat. A first dichroic filter which reflects light and transmits heat, and a second dichroic filter which reflects heat and transmits light, are movably positioned relative to each other near the lamp, so as to be capable of selectively directing both heat and light from the lamp in a given direction, or directing light only from the lamp in a given direction.

3,769,504

FOLDABLE LAMP SHADE

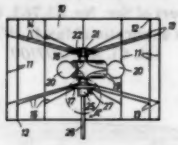
Kurt Hesse, Lemgo-Lippe; Hans Wagner, Wolferborn, and Horst Schunck, Solingen-Weyer, all of Germany, assignors to Staff & Schwarz GmbH, Lemgo-Lippe, Germany

Filed Mar. 15, 1971, Ser. No. 124,384

Claims priority, application Germany, Mar. 13, 1970, G 70 09 308.2; Mar. 13, 1970, G 70 09 309.3; Nov. 25, 1970, G 70 43 573.3

Int. Cl. F21v *1/00*

U.S. Cl. 240—108 A 10 Claims



A foldable lamp shade comprising a covering material cut to the desired shape of the shade, foldable frame holding the covering material, wherein said frame has several tensioning rods secured to said covering material, and several spreading rods pivotably secured at one end to the tensioning rods and at their other end to a slide, said slide being detachably secured on a supporting tube or rod receiving a lamp fitting.

3,769,505

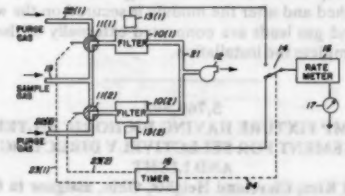
RADIOACTIVE HALOGEN MONITORING SYSTEM

John S. Lee, Morgan Hill, and William R. Alves, Mt. View, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Mar. 15, 1972, Ser. No. 234,922

Int. Cl. G01n *21/26*

U.S. Cl. 250—394 13 Claims



A system of two or more filter-detectors for detecting radioactive halogens such as iodine in a gas stream also containing other radioactive substances such as radioactive noble gases.

3,769,506

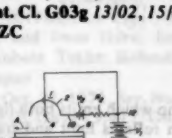
CORONA GENERATING METHODS AND APPARATUS THEREFOR

Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation

Filed Jan. 21, 1971, Ser. No. 108,302

Int. Cl. G03g *13/02*, *15/02*

U.S. Cl. 250—49.5 ZC 13 Claims



Improved corona generating methods and apparatus therefor are provided in accordance with the teachings of this invention wherein a medium in relative motion with a charging station may be rapidly charged to a desired potential in a highly efficient manner. According to one embodiment of the present invention, corona charging apparatus including at least one coronode and having a shield associated therewith is provided and operated in such manner that current flow in the shield is maintained above a selected minimum level during the operation of the corona charging apparatus. The selected minimum level of current flow in the shield is of such value that the coronode will initially supply ion current with a substantially lower threshold energizing potential applied thereto than would be otherwise available and the directivity of the selected minimum level of current flow is such that the potential established at the shield will ensure that a majority of the ion charging current produced at the coronode is delivered to the medium to be charged.

3,769,507

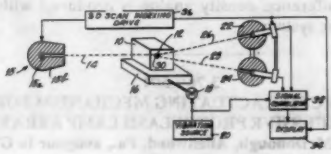
DYNAMIC RADIOGRAPHY

Edward S. Kenney, and Alan M. Jacobs, both of State College, Pa., assignors to Research Corporation, New York, N.Y.

Filed Aug. 25, 1971, Ser. No. 174,739

Int. Cl. G01n *23/00*

U.S. Cl. 250—52 28 Claims



A dynamic radiography system for examining an optically opaque object containing radiation scattering centers by irradiating the object with penetrating radiation to cause radiation scattering by these scattering centers, causing periodic vibration of these scattering centers, detecting radiation scattered by the scattering centers in the object along at least two noncongruent detection channels which are at an angle with each other and which intersect at a common volume within the object, and correlating the outputs of the detectors with a frequency parameter of the vibration to derive thereby information of internal physical and mechanical characteristics of the object.

3,769,508

AUTOMATIC DOT FACTOR SYSTEM FOR A SCINTILLATION DEVICE AND METHOD OF OPERATION

Carl J. Brunnett, Mayfield Heights, and Basil N. Ioannou, Bedford, both of Ohio, assignors to Picker Corporation, Cleveland, Ohio

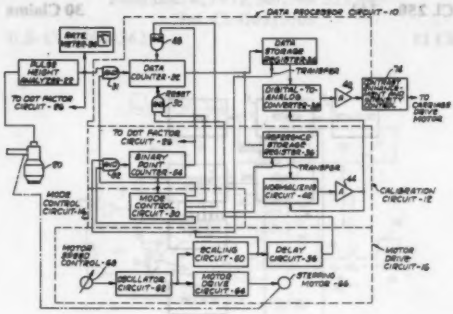
Filed June 23, 1972, Ser. No. 265,625

Int. Cl. G01t *39/18*

U.S. Cl. 250—71.5 S 14 Claims

A scintillation scanner having a dot factor system for automatically spacing the dots which are printed by a color printer representative of radiation activity. The dot factor system utilizes circuitry for counting the number of signals which occur at a calibration point or "hot spot" for a predetermined number of intervals of time and then dividing the number of counted signals by the number of intervals of time to develop a calibrate signal having a high degree of statistical accuracy. The calibrate signal is then applied to a decoding and divider

network for dividing the number of counts representative of radiation activity by a factor which is dependent upon the


DATA PROCESSOR CIRCUIT - 10
DATA COUNTER - 26
DATA STORAGE REGISTERS
DIGITAL-TO-ANALOG CONVERTER - 38
BINARY POINT COUNTER - 84
MODE CONTROL CIRCUIT - 32
NORMALIZER CIRCUIT - 42
CALIBRATION CIRCUIT - 12
SCALING CIRCUIT - 50
DELAY CIRCUIT - 36
OSCILLATOR CIRCUIT - 52
MOTOR DRIVE CIRCUIT - 54
STEERING MOTOR - 56
MOTOR DRIVE CIRCUIT - 16

number of counts which occur at the calibration point to thereby provide optimum spacing between the printed dots for a given study.

3,769,509

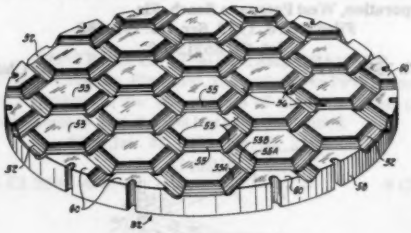
SCINTILLATION CAMERA

Ronald J. Martone, Cheshire; Peter G. Mueller, Guilford, and Richard J. Flis, Plantsville, all of Conn., assignors to Picker Corporation, White Plains, N.Y.

Division of Ser. No. 833,552, June 16, 1962, Pat. No. 3,683,180. This application Mar. 15, 1971, Ser. No. 124,458

Int. Cl. G01t 1/20

U.S. Cl. 250—71.5 S **24 Claims**



A gamma imaging camera with a scintillation crystal and a plurality of phototubes. A light pipe optically couples the crystal and the tubes. The light pipe has, at its output end, a plurality of truncated pyramids each associated with one of the phototubes. As disclosed, the walls of the pyramids are hexagonal in cross-sectional configuration and flare outwardly to intersect adjacent walls, thus providing a continuous field of view.

The disclosure also shows a lift-out detector head subassembly construction.

ERRATUM

For Class 250—432 see:
Patent No. 3,769,490

3,769,510

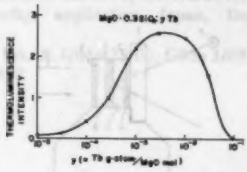
RADIOTHERMOLUMINESCENCE DOSIMETERS AND MATERIALS THEREFOR

Noboru Kotera, Kamakura; Satoru Nishikawa, Yokosuka, and Hitoshi Sakamoto, Chigasaki, all of Japan, assignors to Dai Nippon Toryo Kabushiki Kaisha, Osaka-shi, Japan

Division of Ser. No. 62,116, Aug. 7, 1970. This application Apr. 27, 1972, Ser. No. 248,251

Int. Cl. G01t 0/2

U.S. Cl. 250—459 **10 Claims**



Complex oxide luminescent material consisting of magnesium oxide-silicon dioxide and containing trace amount of terbium or cerium as an activator shows strong thermoluminescence with glow peak at ca. 190°C under excitation by means of electron beam or various radiations and thus is useful as the phosphor for thermoluminescent dosimeter.

3,769,511

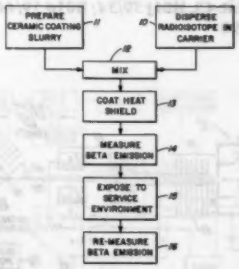
SPACECRAFT HEAT SHIELD TESTING METHOD

Thomas J. Delacy, La Mesa, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed Oct. 12, 1970, Ser. No. 79,836

Int. Cl. G21h 5/02

U.S. Cl. 250—303 **3 Claims**

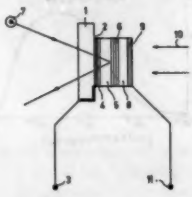


A process for measuring the service life of heat shields on re-entry spacecraft after each flight is disclosed. A low electron-energy level, beta emitting, isotope, having a reasonably long half-life, preferably promethium-147, is uniformly dispersed throughout a refractory heat shield coating. The beta particle emission level at the coating surface is measured to provide a base reading. After each space flight, the beta emission level at the coating surface is again measured, such as by autoradiography or with a Geiger-Muller counter. Erosion, abrasive wear, spalling or other damage is detected and measured to determine whether additional flights can be made without re-coating.

3,769,512
OPTIC RELAY COMPRISING A PHOTOCONDUCTOR ELEMENT

Michel Grenot, Brunoy, and Jean Pergrale, Paris, both of France, assignors to U.S. Phillips Corporation, New York, N.Y.

Filed Oct. 13, 1972, Ser. No. 297,189
Claims priority, application France, Oct. 15, 1971, 7137109
Int. Cl. G02f 1/18
U.S. Cl. 250—225 8 Claims

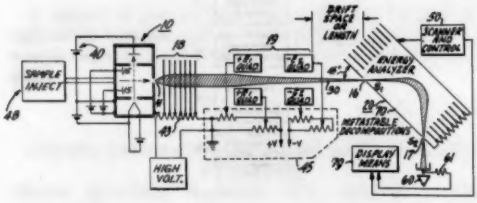


The invention relates to an optic relay comprising a plate of an electro-optic material having a double refraction which is variable in accordance with the voltage applied between its faces. Said voltage is applied via a photoconductor layer whose photoconductivity is modulated by the image to be transmitted. The invention includes the constitution and certain method of manufacturing said relay.

3,769,513
ION KINETIC ENERGY SPECTROMETER

Edward B. Delany, Ridgefield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Dec. 14, 1972, Ser. No. 315,117
Int. Cl. H01j 39/34; B01d 59/44
U.S. Cl. 250—290 10 Claims

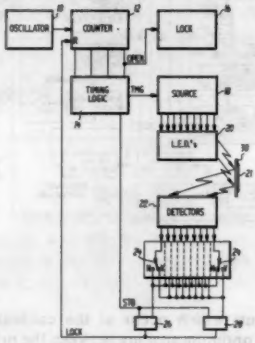


A spectrometer is provided for analyzing metastable decompositions which occur in certain ions. Metastable decompositions result in a precursor ion decomposing into a daughter ion and an uncharged particle of mass. The presence of such ions determine a unique spectra for certain compounds which are difficult to distinguish using conventional mass spectrometer techniques. The spectrometer utilizes a wedge-shaped beam afforded by the use of a relatively inexpensive electrostatic lens assembly. A drift space is provided to allow precursor ions to decompose and thence be analyzed.

3,769,514
CODED RADIATION REFLECTIVE LOCK

Charles T. Clark, Jr., Lighthouse Point, Fla., assignor to Polar Corporation, Pompano Beach, Fla.

Filed Oct. 6, 1972, Ser. No. 295,482
Int. Cl. H01h 47/00
U.S. Cl. 250—341 30 Claims

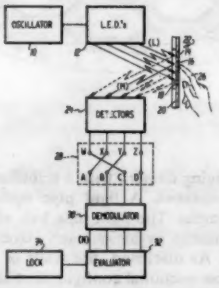


An optical locking system in which a key having a plurality of zones with different reflective characteristics is scanned by infrared energy through a glass plate where the pattern of the reflective zones of the key are evaluated to open a lock. Key construction is also disclosed.

3,769,515
ELECTRO-OPTICAL LOCK AND METHOD

Charles T. Clark, Jr., Lighthouse Point, Fla., assignor to Polar Corporation, West Pompano Beach, Fla.

Filed Oct. 6, 1972, Ser. No. 295,483
Int. Cl. B62j 3/00
U.S. Cl. 250—341 23 Claims

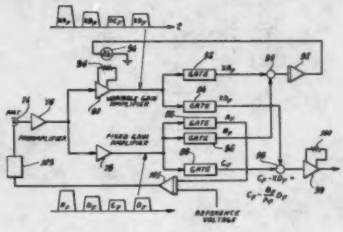


A finger operated electro-optical lock system in which an optical keyboard having a plurality of zones indicated thereon is illuminated by infrared energy and where the pattern or sequence in which the finger is placed in proximity to the zones to render them reflective are evaluated to open a lock.

3,769,516
METHOD AND APPARATUS FOR SENSING FLUORESCENCE RADIATION

David A. Markle, Norwalk, and Eugene R. Schlesinger, Wilton, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Dec. 4, 1972, Ser. No. 311,847
Int. Cl. G01j 3/00
U.S. Cl. 250—363 11 Claims



A fluorescence radiation detector of the Fraunhofer line discriminator type. A sky telescope and an earth telescope each form radiation beams which are directed to a single optical chopper. The chopper sequentially directs each beam through a single Fabry-Perot filter centered at the Fraunhofer line and a single neutral density filter. The chopped segments are recombined to form a beam containing *A*, *B*, *C*, and *D* portions in time sequence where:

A = the direct solar intensity within the continuum;

B = the direct solar intensity inside the selected Fraunhofer line;

C = the reflected solar intensity inside the selected Fraunhofer line; and

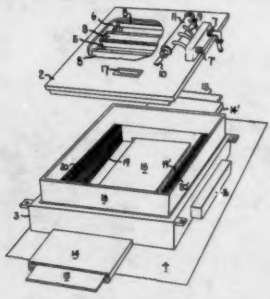
D = the reflected solar intensity in the continuum.

A single photomultiplier tube with a blocking filter in front receives the beam and produces corresponding sequential electrical pulses which are electronically processed to yield fluorescence (*p*) from the equation

$$p=(K/A-B)(C-D(B/A)).$$

3,769,517
CONTROLLED ATMOSPHERE CHAMBER

George E. Coleman, Elmhurst, Ill., assignor to PPG Industries, Inc., Pittsburgh, Pa. The portion of the term of this patent subsequent to Apr. 4, 1989 has been disclaimed.
Filed Jan. 21, 1972, Ser. No. 219,681
Int. Cl. G01n 21/00
U.S. Cl. 250—455 8 Claims

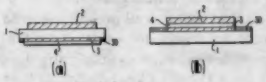


Apparatus which permits treatment of products with ultraviolet light in a controlled atmosphere comprises a chamber having inlet and outlet openings for the passage of a product to be treated, one or more ultraviolet light lamps, and at least one gas reservoir within the chamber separated by a foraminous panel. Gas is introduced into the reservoir, passes through the foraminous panel and over and around the path of travel of the workpiece to be treated.

3,769,518
RECORDING FILM FOR CHARGED ELECTRON BEAM RECORDING

Takuji Kaneda, and Eiichi Mizuki, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 23, 1971, Ser. No. 211,466
Claims priority, application Japan, Dec. 26, 1970, 45/118985
Int. Cl. G01n 23/00; G03g 5/08
U.S. Cl. 250—472 4 Claims

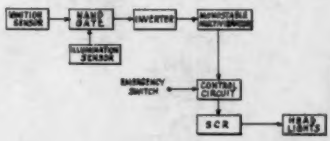


The recording film for charged electron beam recording according to this invention has an electrically conductive coating of $RbAg_4I_5$ provided on the recording film. The $RbAg_4I_5$ coating exhibits an excellent low surface resistivity in comparison with any conventional coating. The charged electron beam recording film of this invention has, furthermore, a protective coating of water-impermeable resin on the $RbAg_4I_5$ coating for preventing it from being attacked by water or moisture.

3,769,519
AUTOMATIC HEADLIGHT CONTROL

Michael R. Adamian, 149 Tanoak Lane, Naperville, Ill.

Filed Oct. 12, 1972, Ser. No. 296,954
Int. Cl. H02g 3/00
U.S. Cl. 307—10 LS 8 Claims

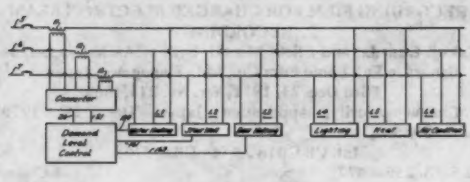


Compact, reliable apparatus operating on electronic principles with no electromechanical parts serves two purposes: one, when the engine is running, to turn on the headlights of a motor vehicle automatically when the ambient level of illumination is such that the headlights should be "on," e.g. at twilight, and, two, to turn the headlights "off" automatically in the event the engine stops running. In another aspect, this invention completely eliminates the headlight switch presently used, and performs identical functions through electronic circuitry. It can be modified to operate in conjunction with a headlight switch. In both cases, undesirable battery drain is avoided since it is impossible to stop the vehicle and have the lights accidentally "on." The circuitry is so arranged that the lights remain "on" for a predetermined interval following "switching off" of the ignition system.

3,769,520
DEMAND LIMIT CONTROL SYSTEM

Donald L. Carrington, 650 Brooke Rd., Glenside, Pa.

Filed Nov. 13, 1972, Ser. No. 305,890
Int. Cl. H02j 13/00
U.S. Cl. 307—41 8 Claims

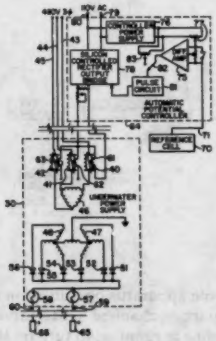


This system provides for automatically energizing and deenergizing electrical loads according to priority designations thereof so that the overall power requirement for a given system of electrical loads does not exceed a limiting value. The system provides a means to automatically set a voltage divider network for a range of load demands that the system will monitor and control. Further, the system provides for sequentially turning on electrical loads and turning off electrical loads so that certain electrical loads will have a priority over certain other loads. In addition, the system permits the electrical loads to be energized such that expendable electrical loads will temporarily be removed from an energy demanding status until priority electrical loads have been satisfied.

3,769,521
IMPRESSED CURRENT CATHODIC PROTECTION SYSTEM

Joseph A. Caldwell; Gary D. Sump, both of Houston, Tex., and Risque L. Benedict, Santa Monica, Calif., assignors to Esso Production Company, Houston, Tex.

Filed Oct. 5, 1972, Ser. No. 295,403
Int. Cl. B01d 13/02
U.S. Cl. 307—95 20 Claims

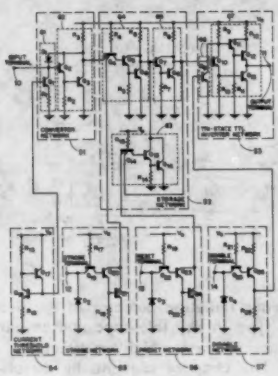


An impressed current cathodic protection system for a marine structure includes an elongated supporting member which can be lowered into position adjacent the underwater structure to be protected, an underwater power supply mounted in the supporting member for converting high voltage alternating current from a source above the water's surface to low voltage direct current, one or more anodes mounted on the supporting member near the power supply, a potential controller for regulating the level of protection provided, and a reference cell for monitoring the system.

3,769,522
APPARATUS AND METHOD FOR CONVERTING MOS CIRCUIT SIGNALS TO TTL CIRCUIT SIGNALS

Warwick R. Abbott, Woburn, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 18, 1972, Ser. No. 218,793
Int. Cl. H03k 19/00, 19/08
U.S. Cl. 307—203 16 Claims

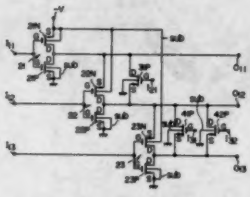


A converter circuit for transferring binary information stored in a metal-oxide-semiconductor (MOS) field effect transistor (FET) memory cell array to conventional transistor-transistor-logic (TTL) circuits. The circuit converts the signals available at the output of a MOSFET memory array into signals suitable for manipulation by TTL circuits. The accurate transfer of stored information is facilitated by an external strobe signal, which activates the converter circuit during a relatively noise-free period of the MOSFET memory. A network is provided for maintaining the output signal of the MOSFET memory at the output of the converter circuit. Another network, responsive to an external signal provides a method of clearing the maintained binary signal in preparation for a period of further activity of the converter circuit. A network for electrically isolating the converter circuit from the output terminal is provided.

3,769,523
LOGIC CIRCUIT ARRANGEMENT USING INSULATED GATE FIELD EFFECT TRANSISTORS

Yasoji Suzuki, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Division of Ser. No. 148,876, June 1, 1971, abandoned. This application Jan. 26, 1973, Ser. No. 327,243
Claims priority, application Japan, May 30, 1970, 45/46155; May 29, 1971, 46/36812
Int. Cl. H03k 19/08
U.S. Cl. 307—205 2 Claims



A NAND/NOR logic circuit arrangement includes a plurality of logic circuit units, each of which is formed of a pair of

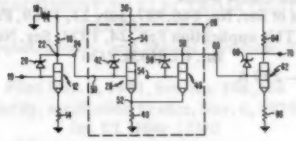
enhancement type IGFET having one P channel and one N channel connected in complementary relationship to each other. The gates of the paired IGFET of the logic circuit units are jointly connected to the corresponding input terminals and the drains thereof jointly to the corresponding output terminals. The sources of the P type IGFET of the logic circuit units are grounded. The source of the N type IGFET of a first logic circuit unit is connected to a negative bias power source and the sources of the N type IGFET of a second and succeeding logic circuit units to the output terminals of the respective immediately preceding logic circuit units. The substrate electrodes of the P type IGFET are grounded and those of the N type IGFET are connected to the negative bias power source. When the input terminals of the logic circuit units are supplied with inputs combined in arbitrary forms in which the grounding voltage and the voltage of the negative bias power source are taken as 1 and 0 digits respectively of the binary logic level or vice versa, is so designed as to produce from the output terminals logic outputs corresponding to the combinations of inputs up to the associated logic circuit units.

3,769,524

TRANSISTOR SWITCHING CIRCUIT

Keith Franklin Mathews, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 27, 1972, Ser. No. 266,847
Int. Cl. H03k *19/34, 19/36, 19/40*
U.S. Cl. 307—215 **17 Claims**



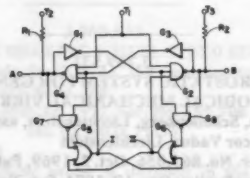
A bistable transistor switching circuit comprising a bipolar transistor adapted to switch states in response to a base node voltage. The circuit further comprises two negative feedback paths. The first comprises a voltage feedback path in which the potential at the transistor emitter terminal responds to a change in emitter current, and the other feedback path comprises a current feedback path through a non-linear impedance located between collector and base terminals.

3,769,525

BI-DIRECTIONAL AMPLIFYING BUS-SWITCH

Richard C. Foss, Ottawa, Ontario, and Walter Spittle, Carp, Ontario, both of Canada, assignors to Microsystems International Limited, Montreal, Quebec, Canada

Filed Sept. 27, 1972, Ser. No. 292,620
Int. Cl. H03k *17/66*; H93k *17/16*
U.S. Cl. 307—254 **17 Claims**



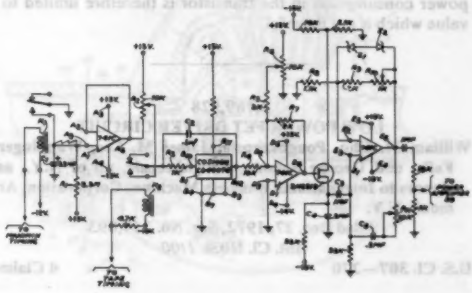
A bus-switch which permits data-transmission with amplification therethrough in a predetermined one of two directions. Transmission in the established direction is maintained regardless of conditions at the output side of the switch until data applied to the switch from such direction ceases. This is achieved by a logic network which includes memory means for remembering the direction of transmission which has priority.

3,769,526

SYNCHRONIZING CIRCUIT

Irving A. Krause, Nutley, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Jan. 31, 1972, Ser. No. 221,902
Int. Cl. H03k *5/00*; G09b *23/28*
U.S. Cl. 307—269 **4 Claims**



A manikin synchronization system is described to cause recorded aural sounds to be coincident with mechanical motions including the effects of the breathing cycles. The synchronization system interfaces with the mechanical and audio systems in order to bring heart sounds, breathing cycles and mechanical motions into time coincidence. The synchronizing system accepts pulses from a mechanical master timing shaft which indicates the mid-points of the breathing cycles. These pulses are applied to the synchronization system which, in response to additional synchronization information on an audio tape, indicates whether the audio signal is early or late with respect to the mechanical system. Accordingly, a voltage controlled oscillator produces an output proportional to the indication to control the tape drive and create synchronization of the audio and mechanical systems.

3,769,527

CIRCUIT ARRANGEMENT FOR IMPROVING THE SHORT CIRCUIT RESISTANCE OF AN LSL CIRCUIT BY AUTOMATICALLY LIMITING CIRCUIT POWER CONSUMPTION

Erhard Pietschmann, Eglharting, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Aug. 10, 1972, Ser. No. 279,503
Claims priority, application Germany, Aug. 27, 1971, P 21 43 031.9
Int. Cl. H03k *1/00*; H0k *3/26*
U.S. Cl. 307—270 **1 Claim**

An output switch amplifier in a gate circuit has improved short circuit resistance and employs two transistors, the

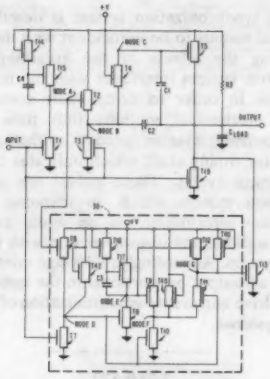
emitter-collector paths of which are connected in series via an emitter resistor of one of the transistors of at least 250 ohm and by way of a diode. The connection point of the resistor with the diode provides an output terminal. The transistors are controlled for conduction or blockage depending on the switching state. If the transistor with the emitter resistor is conductive, the diode will be blocked. In the case of short circuit at the output, the short circuit current at the emitter resistor will produce a voltage which exceeds the Zener break down voltage of the diode. The diode becomes conductive and limits the voltage drop at the emitter resistor since it is connected with the base of the conducting transistor. The possible power consumption in the transistor is therefore limited to a value which is not harmful.

3,769,528

LOW POWER FET DRIVER CIRCUIT

William M. Chu, Poughkeepsie; James M. Lee, Wappingers Falls, and George Sonoda, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1972, Ser. No. 319,093
Int. Cl. H03k *1/00*
U.S. Cl. 307—270 **4 Claims**



Disclosed is an FET (field effect transistor) driver circuit capable of driving large capacitive loads, while dissipating relatively little power. A delay circuit forms a parallel path between the circuit input and output providing a delayed signal at the output of the circuit after the gate to source feedback capacitor of the output FET has been charged. The particular delay circuit disclosed herein accurately tracks the driver circuit providing a precise time delay for limiting transient power dissipation in high frequency operation.

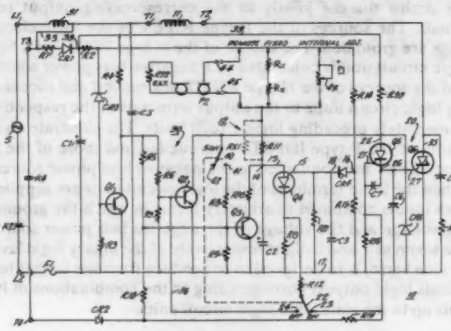
3,769,529

SOLID STATE MOTOR CONTROL ON-OFF TIMER

John B. Krick, Joppa, and Bernard Coleman, Westminster, both of Md., assignors to Rowan Controller Inc., Westminster, Md.

Filed Apr. 24, 1972, Ser. No. 246,608
Int. Cl. H03k *17/26*
U.S. Cl. 307—293 **8 Claims**

A solid state timing means incorporating an electronic timing relay utilizing all solid state components for controlling relays, contactors, solenoids and the like. The timer may be operated in either of two modes of operation, i.e., an "on" delay or an "off" delay, by the operation of a selector switch provided on the timer to select the desired mode of operation.



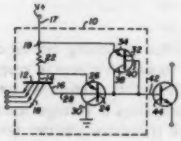
The timing period of the selected time delay is adjustable over a range of the order of from 0.1–100 seconds.

3,769,530

MULTIPLE EMITTER TRANSISTOR APPARATUS

Jeffrey C. Kalb, San Jose, and Robert J. Widlar, Mountain View, both of Calif., assignors to National Semiconductor Corp., Santa Clara, Calif.

Division of Ser. No. 840,987, July 11, 1969, Pat. No. 3,702,955. This application Feb. 24, 1971, Ser. No. 118,441
Int. Cl. H03k *3/26*
U.S. Cl. 307—299 A **9 Claims**



A non-gold doped multiple emitter transistor device having an additional lateral PNP transistor formed in the collector region and a debiasing resistance formed in the base region, these elements cooperating to suppress the inherent PNP beta to substrate characteristic and control the inverse H_{fe} of the device. The emitter of the additional transistor is connected to the base of the MET through a pinch-type debiasing resistor formed in a projection of the base region of the MET, and the base and collector of the additional transistor are shorted together and connected to the collector of the MET so as to provide a shunt path around the base-collector junction thereof.

3,769,531

ELECTROSTATIC SYSTEM FOR GENERATING PERIODICAL MECHANICAL VIBRATIONS

Franz Elkuch, Schellenberg, Liechtenstein, assignor to Etablissement Procor Vaduz, Liechtenstein

Division of Ser. No. 863,056, Oct. 2, 1969, Pat. No. 3,641,373. This application Dec. 17, 1971, Ser. No. 209,142
Claims priority, application Switzerland, Oct. 8, 1968, 14948/68
Int. Cl. H02n *1/00*
U.S. Cl. 310—6 **5 Claims**

The present invention concerns means for generating periodical mechanical vibrations by means of electric energy

and deals with a greatly simplified and efficacious swing system which produces mechanical vibratory movements, which system dispenses with any active elements or components except for an energy or current source or cell, the energy losses produced by ohmic resistances in the system being reduced to a minimum and resulting in a high degree of efficiency, reliability, and accurate performance.

Three electrodes are arranged to constitute a mechanical oscillating or swinging arrangement of which one electrode is

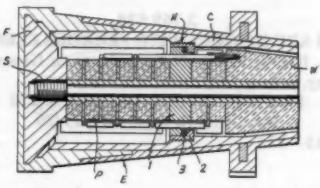
resiliently supported and is capable of flexing and swinging along a predetermined length of an oscillating course and in a direction toward and away from the other electrodes, a charge compensation in condenser fashion occurring when the one electrode approaches one of the other two electrodes closely enough within an electric field established between said electrodes. In the position of rest said electrodes are sufficiently remote or spaced from each other but are aligned with their frontal faces confronting each other.

3,769,532

MECHANICAL DECOUPLING DEVICE FOR ATTACHMENT TO ELECTROACOUSTIC TRANSDUCERS

Bernard Tocquet, Sanary, and Marcel Personnic, Toulon, both of France

Filed Nov. 8, 1971, Ser. No. 196,344
Claims priority, application France, Nov. 6, 1970, 7039959
Int. Cl. H04r *17/00*
U.S. Cl. 310—8.9 **6 Claims**



A device for attachment of electroacoustic transducers in casings immersed under water and effecting mechanical decoupling through flexible or deformable portions such as rubber or elastomer rings between the vibrating parts and their support.

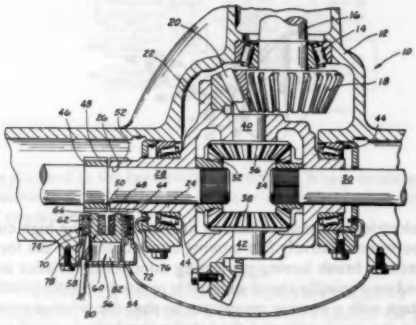
3,769,533

ADAPTIVE BRAKING WHEEL SPEED SENSOR

Edward M. Pauwels, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed May 22, 1972, Ser. No. 255,706
Int. Cl. H02k *21/38*
U.S. Cl. 310—155 **5 Claims**

An electromagnetic probe is installed in the differential housing of an automotive vehicle. The probe includes a substantially U-shaped core piece having a base which abuts a permanent magnet and pair of generally parallel arms which extend through the centers of a pair of coils. The arms extend into close proximity with circumferentially spaced teeth formed on the differential frame and on one of the axles. Since rotation of the teeth past the legs changes the reluctance path of the magnet, a pulsed output will be generated in the coils, the frequency of which varies directly according to the speed of rotation of the frame and of the axle. Since the frame rotates at substantially the same speed as the vehicle drive shaft or at some known fraction of that speed, and since the



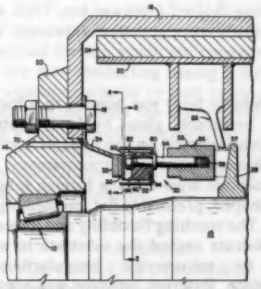
drive shaft rotates at the average speed of the left and right axles, by determining the speed of rotation of the frame and of one of the axles, the speed of rotation of the other axle may be readily determined, thereby providing intelligence of the speed of rotation of both of the vehicle's rear axles by using only the single probe. This speed sensor is particularly useful in automotive adaptive braking systems.

3,769,534

WHEEL SPEED SENSOR

Richard C. Wroblewski, Warren, and Charles G. Wright, Detroit, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed June 16, 1972, Ser. No. 263,687
Int. Cl. H02k *19/24*
U.S. Cl. 310—168 **8 Claims**



A self-adjusting wheel speed sensor mechanism including a magnetic sensor and rotor on a vehicle axle and wheel, the sensor and rotor being automatically adjusted to a predetermined relationship as the wheel is mounted on the axle.

3,769,535

ELECTRICAL CURRENT COLLECTING DEVICES

James John Bates, Shrivenham, England, assignor to National Research Development Corporation, London, England

Filed Nov. 19, 1971, Ser. No. 200,550
Claims priority, application Great Britain, Nov. 20, 1970, 55,266/70
Int. Cl. H02k *13/00*
U.S. Cl. 310—219 **9 Claims**

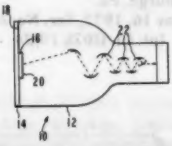
An electrical current-collecting device for passing high currents between relatively fast moving conductors is in the form of a circular brush having projecting conducting bristles and mounted on a spindle about which it is rotated with the bristles in contact with a moving conductor so that the relative speed between the conductor and the bristles is relatively small and good electrical conduction is achieved. The current may then be passed on to a second, normally stationary, conductor through the spindle made of conducting material and much smaller in diameter than the brush so that contact with the second conductor can be made at relatively low speed.

3,769,536

III-V PHOTOCATHODE BONDED TO A FOREIGN TRANSPARENT SUBSTRATE

George A. Antypas, Palo Alto, and Malcolm L. Kinter, Sunnyvale, both of Calif., assignors to Varian Associates, Palto Alto, Calif.

Filed Jan. 28, 1972, Ser. No. 221,679
Int. Cl. H01j *39/04, 43/04*
U.S. Cl. 313—94 **12 Claims**



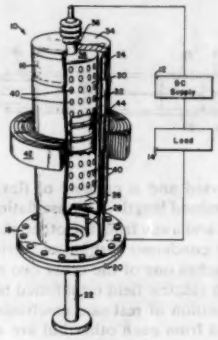
A III-V photocathode layer was bonded to a foreign transparent substrate, preferably glass, by heat treatment. The foreign substrate was selected on the basis of matching thermal expansion characteristics and transparency considerations. The photocathode layer and the foreign substrate were complimentarily shaped, preferably flat, pressed together, and then heat treated. The resulting flexibility and lowered surface tension of the substrate caused the substrate to microscopically conform to microscopic irregularities in the photocathode surface. External pressure was applied across the substrate-cathode interface to facilitate the bonding process. The time required to complete the bonding depended on the pressure and temperature of the heat treating step. An optional silicon dioxide passivating layer was provided between the photocathode layer and the substrate to prevent diffusion into the photocathode of poisonous substances commonly found in glass which are detrimental to the operation of the cathode.

3,769,537

BAFFLE FOR PERFORATED ELECTRODE IN A CROSSED-FIELD SWITCH DEVICE

Gunter A. G. Hofmann, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Sept. 14, 1972, Ser. No. 289,195
Int. Cl. H01j *1/50, 3/20*
U.S. Cl. 313—161 **9 Claims**



In the nonconducting state, breakdown between concentric electrodes is determined by the Paschen law. If the inner electrode which defines the interelectrode space is perforated, ionization can occur therein, thus reducing holdoff voltage at a given pressure. Path length-limiting shielding adjacent to the electrode perforations prevents ionization within the electrode to maintain holdoff voltage, corresponding to the original electrode spacing.

ERRATA

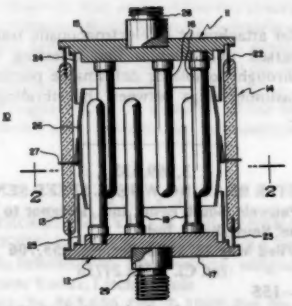
For Classes 313—175 and 313—277 see:
Patents Nos. 3,769,544 and 3,769,547

3,769,538

VACUUM ARC DEVICES WITH FERROUS ELECTRODES

Lawson P. Harris, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 20, 1972, Ser. No. 236,278
Int. Cl. H01h *9/34*; H01j *21/20*
U.S. Cl. 313—233 **19 Claims**



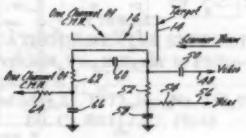
Vacuum arc devices having a pair of primary arc-electrode assemblies in the form of a rod array structure utilize hardened ferrous materials exhibiting high hardness, ductility and high recovery strength for the attainment of higher volt-

age handling capacity and higher current interrupting characteristics than devices utilizing conventional nonferrous cuprous alloy electrode materials.

3,769,539
CAMERA TUBE

Clive E. Catchpole, Southfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 801,627, Feb. 24, 1969, abandoned. This application Apr. 1, 1971, Ser. No. 130,440
Int. Cl. H01j *29/41*
U.S. Cl. 315—12 **19 Claims**

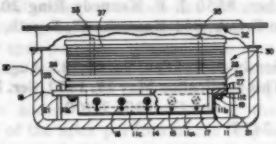


An intensified television camera tube including a channel multiplier array incorporated adjacent the target electrode to multiply the electrons being emitted from the source, the channel multiplier array being utilized as a mechanical support for the target electrode and as the output screen or readout mesh. Also, a system for eliminating spurious signals from the output video signal which includes a capacitance network connected in circuit with the input and output sections of the multiplier array.

3,769,540
AREA ELECTRON FLOOD GUN

James K. Thomson, Palos Verdes Peninsula, Calif., assignor to Northrop Corporation, Beverly Hills, Calif.

Filed Oct. 26, 1970, Ser. No. 83,909
Int. Cl. H01j *29/41*
U.S. Cl. 315—12 **6 Claims**



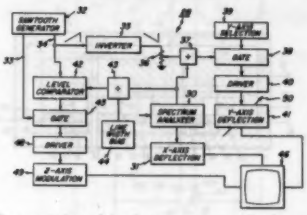
A plurality of strip filaments provide a source of electrons. A deflector electrode in the form of a flat dish is placed behind the filaments, and director electrodes which may be in the form of wire meshes, are placed forward of the filaments in the direction in which the electron flow is desired. Additional electrodes which may be in the form of narrow plates are placed along the ends of the filaments to compensate for fall-off in emission at the filament extremities. The various electrodes are positioned relative to the filaments and have potentials applied thereto such that the uniform distribution of electrons is provided over a predetermined area throughout which electron flow is desired.

3,769,541
LINE WIDTH MODULATED DISPLAY SYSTEM

David E. Wood, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 28, 1971, Ser. No. 184,343
Int. Cl. H01j *29/70*
U.S. Cl. 315—22 **8 Claims**

In a two dimensional display, the width of the line trace is modulated according to displacement in one direction of the display. Utilizing an oscilloscope as the display mechanism, for example, a plurality of closely spaced sawtooth waveforms in the vertical coordinate are utilized in producing the trace as

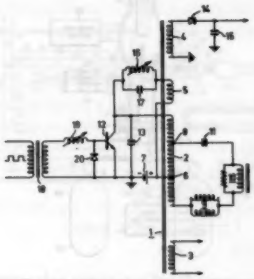


it is scanned in the horizontal coordinate. Width modulation is obtained by modulating the beam intensity between an on and off condition.

3,769,542
FLYBACK EHT AND SAWTOOTH CURRENT GENERATOR HAVING A FLYBACK PERIOD OF AT LEAST SIXTH ORDER

Richard Pieters, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 18, 1972, Ser. No. 245,144
Claims priority, application Netherlands, Apr. 20, 1971, 7105268
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD **6 Claims**



A flyback EHT and sawtooth current generator for television display apparatus including a transformer and switching means connected thereto which are conducting during a scan period and are non-conducting during a flyback period, and reactances whether parasitic or nuts connected to the transformer which together with the transformer constitute a network having a minimum of three prescribed resonant frequencies during the flyback so that a scan which is substantially without any oscillations and a flyback EHT pulse having a wide and flat peak is produced.

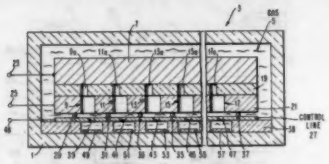
3,769,543
LOW VOLTAGE GAS DISCHARGE DISPLAY

William B. Pennebaker, Carmel, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1971, Ser. No. 213,946
Int. Cl. H05b *37/00*
U.S. Cl. 315—169 TV **14 Claims**

A low voltage gas discharge display device, the individual cells of which are addressable by half-select pulses applied to selected control and collector electrodes. In the "off" or standby state, low glow discharge occurs between an anode

and a cathode which are electrically common to all of the cells. Control electrode lines, associated with rows of cells, are biased to create a current impeding ion sheath across the respective cell holes therethrough to the positively biased collector electrode lines associated with columns of cells. Half-select pulses applied to a control and collector electrode line act to reduce the ion sheath across the hole at the interselection thereof and initiate positive column glow discharge therethrough.

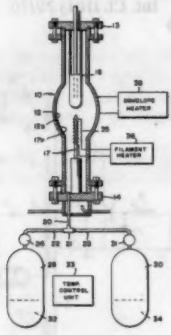


3,769,544

PURGING MEANS AND METHOD FOR XENON ARC LAMPS

Charles G. Miller, Los Angeles, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed June 19, 1972, Ser. No. 264,268
Int. Cl. H01j *61/26, 61/28*
U.S. Cl. 313—175 **13 Claims**



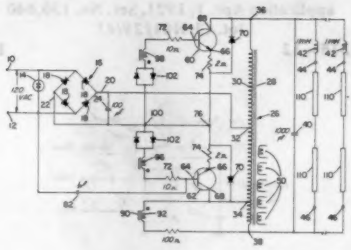
A high pressure Xenon short-arc lamp with two reservoirs which are selectively connectable to the lamp's envelope is disclosed. One reservoir contains an absorbent which will absorb both Xenon and contaminant gases such as CO_2 and O_2. The absorbent temperature is controlled to evacuate the envelope of both the Xenon and the contaminant gases. Thereafter, the temperature of the absorbent is raised to desorb only clean Xenon while retaining the contaminant gases, thereby clearing the envelope of the contaminant gases. The second reservoir contains a gas whose specific purpose it is, by means of steps described in the disclosure, to remove the objectional metal film which deposits gradually on the interior surface of the lamp envelope during normal arc operation. The origin of this film is metal transferred from the cathode of the arc lamp by sputtering or other gas transfer processes. Since the cathodes in different lamps may, for particular purposes, be made of various metals, e.g. Tungsten, Nickel, Rhodium, Molybdenum, it is necessary to use a cleanup gas, and cleanup procedures, that are appropriate to the metal constituting the cathode surface, since it is the cathode surface material, which, transferred to the interior wall of the lamp envelope, constitutes the objectional metal film. Suitable gases and processing methods are described in the disclosure for a variety of cathode metals.

3,769,545

CIRCUIT ARRANGEMENT FOR OPERATING ELECTRIC ARC DISCHARGE DEVICES

Ronald C. Crane, Cambridge, Mass., assignor to Kodan, Inc., Wellesley, Mass.

Filed May 25, 1972, Ser. No. 256,798
Int. Cl. H05b *37/02*
U.S. Cl. 315—219 **17 Claims**



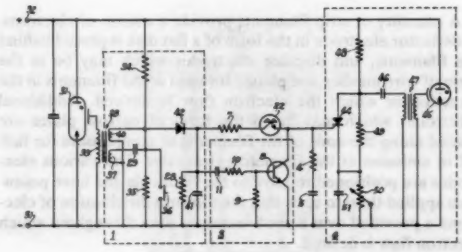
Electric arc discharge device operating apparatus includes rectifier means and an inverter circuit connected to said input terminals and having first and second output terminals. An autotransformer has a main winding across which is connected a capacitor. A drive transformer has a core of linear low loss characteristics, a primary winding and two secondary windings. The primary winding is connected across a portion of the main autotransformer winding between one terminal and an adjacent tap, and each secondary winding is connected to the control terminal of one of the inverter switching devices. The saturation characteristics of the drive transformer are coordinated with the saturation characteristics of the autotransformer so that drive transformer saturation causes switching of the inverter circuit switching devices without saturation of the autotransformer.

3,769,546

ELECTRONIC FLASH DEVICE

Wolfgang Pecher, 8550 J. F. Kennedy Ring 20, Forchheim, and Juergen Frisch, 851 Kasersh. 47, Fuerth, both of Germany

Continuation-in-part of Ser. No. 66,783, Aug. 25, 1970, abandoned. This application May 17, 1972, Ser. No. 254,308
Int. Cl. H05b *37/00*
U.S. Cl. 315—241 P **11 Claims**



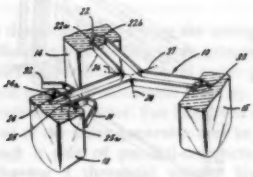
The electronic flash device includes a flash tube, a light sensitive electronic component for converting light reflected from an object to be illuminated into a current proportional to the quantity of light reflected, an integrating stage adapted to integrate this current, an a flash duration limiting circuit. On the occurrence of a pre-set voltage at the integration stage, the duration limiting circuit terminates the discharge of light in the flash tube. An operating voltage is applied to the light sen-

sitive electronic component simultaneously with the commencement of ignition in the flash tube. An electronic switching device is connected with the light sensitive component and adapted to cut out disturbing charging and discharging currents associated with the inherent capacitance of the light sensitive electronic component and occurring upon a sudden application of the operating voltage. The time in which the switching device remains active corresponds at least to the charging and discharging duration of the inherent capacitance of the light sensitive component; the switching device is de-activated before the light emission of the flash tube begins.

3,769,547
CATHODE HEATER SUPPORT

Glenn Werst, Perkasie, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed May 25, 1972, Ser. No. 256,979
Int. Cl. H01j *1/92, 19/46*
U.S. Cl. 313—277 **4 Claims**



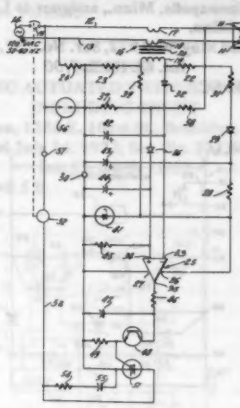
A heater support loop for use in the multicathode gun of a cathode ray tube. The loop is made from a single piece of conductive material, which is ribbon-like in cross section and preformed into a generally triangular shape with pointed terminations, or apex portions, "glassed" into vitreous assembly rods. Three gaps are provided in the ribbon, intermediate the apexes of the loop, and the free ends adjoining the gaps are positioned to accept the connections of the filamentary heaters. Two of the apex portions of the loop are formed of short, straight runs of ribbon which form the point and interlock with the vitreous rod to prevent twisting of the ribbon material in the rod. The third apex is formed by free ends of the conductive ribbon disposed in closely spaced adjacency and each free end includes a portion bent outwardly and rearwardly from the adjoining end to provide for interlocking engagement with the embedding vitreous rod and extending into position to serve as a supply conductor for the loop.

3,769,548
GROUND FAULT INDICATOR

Von G. Pardue, Lawrenceville, Ga., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed May 15, 1972, Ser. No. 253,151
Int. Cl. H02h *3/28*
U.S. Cl. 317—18 D **5 Claims**

A ground fault detector utilizes a differential transformer to detect an imbalance in load current flowing in each of the main conductors, one of which is grounded. The differential transformer secondary winding is connected to pass a bias current which produces a potential that prevents downgrading of detector performance when the grounded main conductor becomes grounded near the load. This bias current also

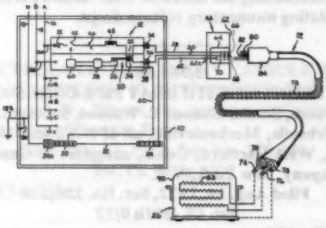


produces a magneto-motive force to negate core losses and cause the transformer core to operate at a high permeability region on the magnetization curve.

3,769,549
ELECTRICAL FIRE AND SHOCK PROTECTIVE APPARATUS

Charles Bangert, Jr., West Hartford, Conn., assignor to General Electric Company, New York, N.Y.

Filed Aug. 7, 1972, Ser. No. 278,246
Int. Cl. H02h *3/28*
U.S. Cl. 317—18 A **10 Claims**



Electrical protective apparatus for the prevention of electrical fires as well as protection against injury to people by electric shock, including a two-conductor flexible "extension cord" having at least one conductor thereof completely surrounded by a flexible conductive sheath insulated from the main conductors and preferably covered with an outer layer of insulating material. An automatic circuit interrupting device is connected between one of the two main conductors and the "high" or ungrounded side of a source of electric power. The other conductor is connected to the grounded side of the source. The conductive sheath is also connected to the grounded side of the power source by a third conductor.

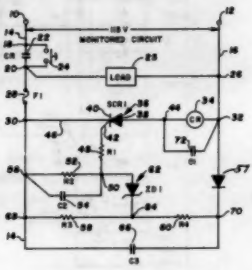
In case of wear or damage to the extension cord, or deterioration of its insulation due to excessive heat, the two main conductors cannot come in contact with each other without at least one of them coming in contact with the conductive sheath. This causes some current to be diverted from at least one of the main conductors and to flow through the sheath and the third conductor, to ground.

The circuit interrupting device includes means which is responsive to the diversion of a small amount of current (such as 5 milliamperes) from either of the main conductors of the extension cord to the conductive sheath and the third conductor and causes automatic opening of the circuit breaker when this occurs.

3,769,550
VOLTAGE SENSITIVE CONTROL DEVICE

Irvin I. Lee, Minneapolis, Minn., assignor to Lear Siegler, Inc., Minneapolis, Minn.

Filed May 30, 1972, Ser. No. 257,509
Int. Cl. H02h *7/00*
U.S. Cl. 317—33 SC **2 Claims**

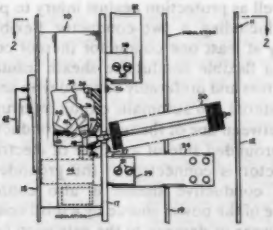


A power supply monitor circuit which disconnects a load from the alternating current supply lines when the output voltage from the supply drops below a predetermined level for an interval of time exceeding a certain predetermined tolerable interval. The output voltage level of the supply is sensed by a voltage divider connected in parallel with the supply, and a Zener diode is used to establish a lower threshold at which a silicon controlled rectifier (SCR) can be fired. The SCR is connected in series with a load cut-out relay to thereby control the relay energization. A time delay circuit is associated with the gate electrode of the SCR to allow conduction thereof for a short time period following a drop in supply voltage, thus establishing the tolerable interval and permitting and accommodating momentary voltage drops.

3,769,551
CIRCUIT BREAKER WITH HEAT PIPE COOLING MEANS

James Corman, Scotia; Gunnar E. Walmet, Schenectady; Stanley P. Urbaetis, Mechanicville, all of N.Y., and Herbert M. Dimond, West Hartford, Conn., assignors to General Electric Company, New York, N.Y.

Filed Aug. 14, 1972, Ser. No. 280,228
Int. Cl. H01h *9/52*
U.S. Cl. 317—100 **4 Claims**

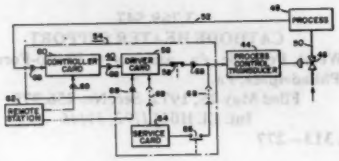


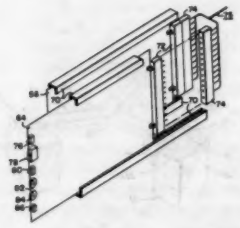
A multi-phase electric circuit control device mounted in a switchboard includes a heat pipe for each phase, having one end in close thermal contact with a relatively high-temperature point of the control device and extending behind the device. The heat pipe has heat-dissipating fins positioned in a portion of the switchboard where natural circulation of the air serves to carry heat away and thereby dissipate heat from the high-temperature point of the control device, making it possible for the control device to carry more current than it would otherwise be able to do safely. In one form, heat is drawn from a point intermediate to the ends of the control device by a heat pipe and heat transfer means extending through an opening in the back wall of the casing of the device. In another form, the heat pipe transfers heat away from the circuit control device terminals.

3,769,552
PROCESS CONTROL APPARATUS AND METHOD

Henry F. Cook, and James F. Sutherland, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 5, 1972, Ser. No. 268,953
Int. Cl. H02b *1/04*
U.S. Cl. 317—112 **16 Claims**



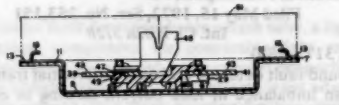


A process control apparatus and method in which an adjustable control signal is continuously applied to a process control transducer while components of the printed circuit control system are removed for repair or modification. By transferring to manual control by an output driver card, the controller card which provides the signals for the regulator mode of operation may be removed and replaced by a service card. A manual signal generated by the service card is matched with that of the driver card before transfer to the service card is effected and the driver card is removed. An automatic reset feature on the service card precludes inadvertent transfer as the card is plugged in. The manual setting on the driver card may be controlled from a remote station for process control purposes, or from the service card when installed for matching signals when the driver card is replaced. No extra plug-in units are required in the printed circuit rack since the service card replaces the controller card.

3,769,553
PANELBOARD WITH INSULATIVE SNAP-IN SUPPORT MEANS

Kenneth R. Coley, Fairfield, Conn., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 1, 1972, Ser. No. 302,950
Int. Cl. H02b *1/20*
U.S. Cl. 317—119 **9 Claims**



A panel assembly comprising a pair of bus bar structures and an insulating support structure that supports the bus bar

structures in a particular relationship with adequate spacing and insulation between the bus bar structures which are of opposite polarity.

3,769,554

APPARATUS FOR VARYING THE STRENGTH OF A STABILIZED MAGNETIC FIELD

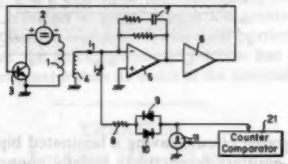
Toni W. Keller, Fallanden, and Werner H. Tschopp, Forch, both of Switzerland, assignors to Spectrospin A.G., Zurich-Fallanden, Switzerland

Filed June 2, 1972, Ser. No. 259,211

Claims priority, application Germany, Sept. 15, 1971, P 21 46 033.3

Int. Cl. G05f 7/00

U.S. Cl. 317—123 **6 Claims**



Apparatus is described for varying the strength of a stabilized magnetic field by connecting to an integrating amplifier in a field-stabilizing feedback loop a pulse generator that produces current pulses of selectable polarity. The amplifier may be an operational amplifier. For improved signal-to-noise ratios, the output of the pulse generator may be applied to the amplifier through a pair of parallel-connected, oppositely-poled diodes having a threshold voltage high enough to eliminate noise signals.

3,769,555

ELECTRONIC CONTROL DEVICE IN PARTICULAR FOR USE IN A VARIABLE RELUCTANCE MOTOR

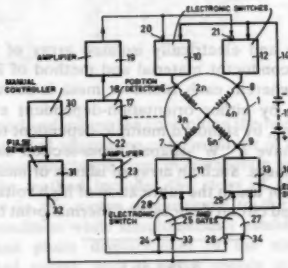
Raymond Dolbachian, Meudon, and Claude Lefevre, Saint-Maur, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 4, 1972, Ser. No. 223,635

Claims priority, application France, Feb. 5, 1971, 7103937

Int. Cl. H02k 29/00

U.S. Cl. 318—138 **11 Claims**



A control device for an electric motor with a stator having at least four groups of coils. Four switches are connected to the four coil groups so that two switches connect one terminal of a DC voltage supply to two coil groups and the other two switches connect the other terminal of the DC supply to the other two coil groups. A rotor position detector operates the first two switches in mutually exclusive time intervals at a frequency related to the rotor rotation. A pulse generator and two AND gates operate the other two switches in mutually exclusive time intervals at the frequency of the pulse generator. The frequency and the width of the pulse generator output pulses are variable.

3,769,556

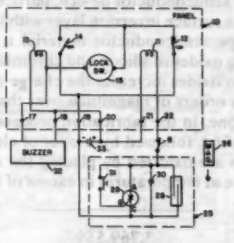
MAGNETIC ACTUATED SWITCH APPARATUS INCLUDING SHUNT

Irving B. Feldman, 1255 E. 101st St., Brooklyn, N.Y.

Filed July 14, 1972, Ser. No. 271,863

Int. Cl. G08b 13/08

U.S. Cl. 317—148.5 B **11 Claims**



A magnetic actuated switch apparatus including a shunt circuit for temporarily bypassing the switch in the absence of the magnet is described. Such apparatus is especially adapted for burglar alarm systems which require arming without setting off the alarm while opening the door in the process of departing from the premises. The switch is solid state in nature utilyzing an SCR or TRIAC as the shunting element for a magentic reed, and also incorporates means for preventing turn-on of the SCR or TRIAC when the magnetic reed opens upon subsequent opening of the door to the premises.

3,769,557

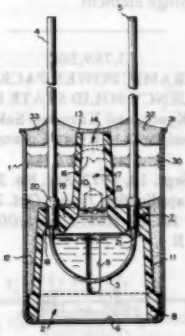
ELECTROLYTIC TIME DELAY CAPSULE WITH PLASTIC CUP ELECTRODE HOLDER

John Paul Jones, Jr., Wayne, Pa., assignor to Compuline Corporation, King of Prussia, Pa.

Filed July 17, 1972, Ser. No. 272,431

Int. Cl. H01g 9/00

U.S. Cl. 317—230 **10 Claims**



An electrolytic timer capsule is constructed of an outer cylindrical closed end case and an inner insulated upside down cup enclosing an electrolyte solution to contact the closed end of the case. The case comprises one electrode and the other is a U-shaped wire extending through the cup with an intermediate section immersed in the electrolyte solution to be etched away until broken. The manufacturing process for the

capsule comprises a series of simplified operations comprising insert of the cup into the case, filling with electrolyte and sealing with epoxy resin.

3,769,558

SURFACE INVERSION SOLAR CELL AND METHOD OF FORMING SAME

Joseph Lindmayer, Bethesda, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Dec. 3, 1971, Ser. No. 204,699
Int. Cl. H01l *15/00*
U.S. Cl. 317—234 R **6 Claims**

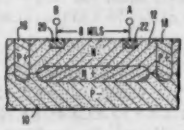
An improved semiconductor device, particularly suitable as a solar cell, has a surface inversion layer with increased charge density. A *p*-type semiconductor material is covered with a layer comprising oxides of silicon and chromium. The addition of the chromium oxides increases the charge density of the inversion layer by orders of magnitude over that created by the silicon oxide alone. In the fabrication process, a silicon oxide layer is formed first, followed by a layer of elemental chromium. Both layers are oxidized by placing the device in an oxygen atmosphere at temperatures in excess of 800° C.

3,769,559

NON-VOLATILE STORAGE ELEMENT

Jack A. Dorler, Wappingers Falls; John L. Forneris, Peekskill, and Donald J. Swietek, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 21, 1972, Ser. No. 265,103
Int. Cl. H01l *9/06, 7/00*
U.S. Cl. 317—234 R **7 Claims**



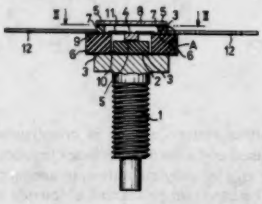
A process for forming a non-volatile storage element having symmetrical characteristics comprising the steps of forming a pair of back-to-back Schottky barrier diodes on a monolithic substrate and selectively passing current between the Schottky barrier diodes in opposite directions in order to form a non-volatile bistable storage element.

3,769,560

HERMETIC CERAMIC POWER PACKAGE FOR HIGH FREQUENCY SOLID STATE DEVICE

Shin Ichi Miyake, Kyoto, and Kazunari Sakai, Kagoshima-ken, both of Japan, assignors to Kyoto Ceramic Co., Ltd., Kyoto-shi, Japan

Filed Sept. 18, 1972, Ser. No. 289,963
Claims priority, application Japan, Oct. 2, 1971, 46/77365
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **5 Claims**



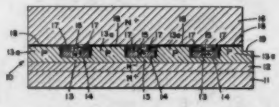
This invention relates to a semiconductor device and more particularly to a semiconductor device increased in performance reliability by improving the fragility effected by heat and a lapse of time on the semiconductor device such as power transistor, Thyristor, Triac, etc.

3,769,561

CURRENT LIMITING INTEGRATED CIRCUIT

Joseph P. White, South Somerville; Robert Amantea, Princeton, and Hans W. Becke, Morristown, all of N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 24, 1972, Ser. No. 229,139
Int. Cl. H01l *11/06, 11/14, 19/00*
U.S. Cl. 317—235 R **4 Claims**



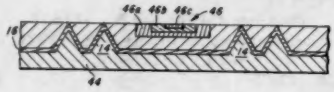
An integrated circuit having a laminated bipolar transistor with multi-emitters respectively serially connected to a plurality of deep depletion field effect transistors and/or inversion channel field effect transistors. The integrated circuit has a common layer functioning as both the drain of one of the field effect transistors and an emitter of the bipolar transistor. In operation the field effect transistors conduct currents in series with the respective emitters of the bipolar transistor. In addition the field effect transistors provide ballasting by limiting the current therethrough.

3,769,562

DOUBLE ISOLATION FOR ELECTRONIC DEVICES

Kenneth E. Bean, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 7, 1972, Ser. No. 223,905
Int. Cl. H01l *7/00*
U.S. Cl. 317—235 R **3 Claims**



A thermally and electrically isolated array of islands or mesas of semiconductor material and method of fabrication are provided wherein each island or mesa is surrounded by moats formed by either orientation-dependent etching or, space permitting, by standard multiple-dependent techniques. These moats have a "W"-shaped cross-section surrounding each island or mesa. Such an array of islands or mesas is especially adapted for use in the fabrication of high voltage or high power integrated circuit devices, and thermal print heads.

3,769,563

HIGH SPEED, HIGH VOLTAGE TRANSISTOR

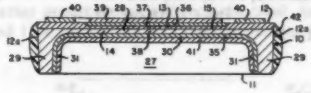
Surinder Krishna, Greensburg, and John R. Davis, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 3, 1972, Ser. No. 249,981
Int. Cl. H01l *5/00*
U.S. Cl. 317—235 R **3 Claims**

A high voltage transistor with high switching speed is provided by a semiconductor body having a thin internal portion and a thick integral peripheral portion. The thin internal portion has a substantially uniform width of greater than about 28

microns and oppositely facing surface areas each of greater than about 0.10 cm². The thick peripheral portion has a width greater than about 150 microns and an annular dimension, i.e. radial width, greater than 10 microns but less than the corresponding radial dimension of the internal portion.

The collector region at the thin internal portion has a width



greater than about 20 microns, a reverse breakdown voltage greater than its reach-through voltage, an impurity concentration less than 8×10^{14} atoms/cm³, and a minority carrier diffusion length at least an order of magnitude greater than the width of the collector region at the internal portion. The collector region at the thick peripheral portion has a width at least 20 percent greater than its width at the internal portion.

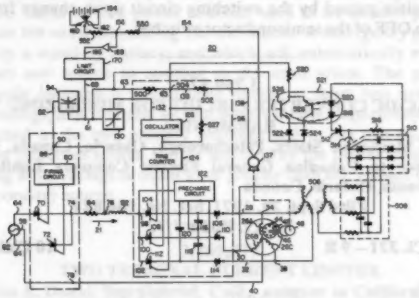
ERRATUM

For Class 318—138 see:
Patent No. 3,769,555

3,769,564
METHOD AND MEANS FOR LIMITING THE MAXIMUM HORSEPOWER OUTPUT OF A SELF-EXCITED ALTERNATING CURRENT MOTOR

Charles E. Rettig, Brookfield, Wis., assignor to The Louis Allis Company, Milwaukee, Wis.

Filed Aug. 30, 1972, Ser. No. 284,856
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 **6 Claims**

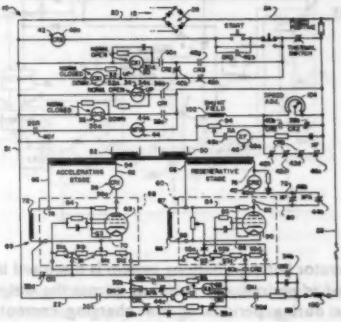


A method and means for controlling the horsepower output of a self-excited alternating current motor of the induction or synchronous reluctance type. In connection with an induction motor, the method includes the steps of generating a slip frequency in the motor proportional to the desired output torque condition while simultaneously establishing the magnitude and phase displacement of the stator current at preselected values, and, at rotor speeds at predetermined magnitude, simultaneously adjusting the slip frequency in the motor to maintain a constant horsepower output as motor speed increases. Analogous steps are carried out to control a torque of a synchronous reluctance motor. The means comprises a motor control having a frequency control means for providing a stator current of a desired frequency and phase displacement to the motor, a power supply means for regulating the magnitude of the stator current to a predetermined value, a speed control means, and a means for limiting the horsepower output of the motor at motor speeds above a predetermined value.

3,769,565
VOLTAGE CONTROL

Arthur K. Littwin, Lincolnwood, Ill., assignor to Littwin Family Trust No. 1, Chicago, Ill.

Continuation of Ser. No. 725,698, May 1, 1968, abandoned.
This application Feb. 22, 1971, Ser. No. 117,764
Int. Cl. H02p *3/12*
U.S. Cl. 318—380 **1 Claim**

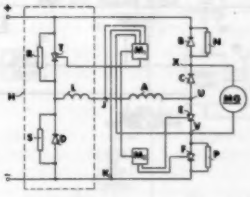


Voltage control circuit having a DC motor, and including other instrumentalities, such as a rectifier, subject to damage by excessive emf as in braking, and means controlled by the counter emf for actuating relays which control resistances and correspondingly control a valve (tube) for opening circuit to the rectifier and thereby cutting it out of the circuit from the counter emf.

3,769,566
STATIC SWITCHING SYSTEM FOR INSTANTANEOUS CHANGEOVER AN ELECTRIC MACHINE

Robert Mehta, Paris, France, assignor to Jeumont-Schneider, Paris, France

Filed Oct. 25, 1972, Ser. No. 300,739
Claims priority, application France, Oct. 26, 1971, 7138388
Int. Cl. H02p *3/14*
U.S. Cl. 318—375 **2 Claims**

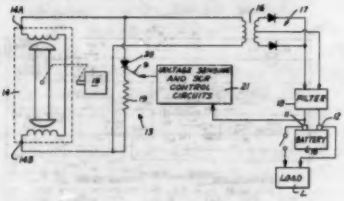


Static switching system for instantaneous changeover of a series DC machine energized by a current chopper. The field of the machine is connected at a first point to the smoothing choke of the chopper and at a second point between two rectifying arms, one made of diodes and the ether made of thyristors, the armature of the machine being connected between two mid-points of the above rectifying arms. A first control logic determines the voltages between the above mentioned first point and the mid-points of the rectifying arms. A second control logic triggers the thyristors in function of such voltages to perform the changeover.

3,769,567
BATTERY CHARGING SYSTEM

Charles W. Cox, Houston, Tex., assignor to Automatic Power, Inc., Houston, Tex.

Filed June 14, 1972, Ser. No. 262,688
Int. Cl. H02j 7/14
U.S. Cl. 320—27 13 Claims

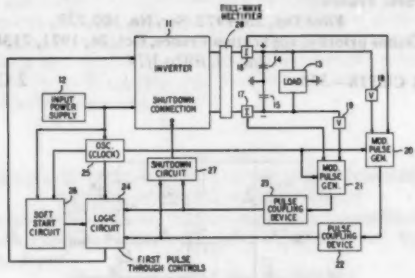


A generator battery charging system is disclosed in which a shunt load is periodically switched across the output of the generator during periods of low charging current requirements from the battery to provide a substantially constant load on the generator.

3,769,568
DC-TO-DC CONVERTER HAVING SOFT START AND OTHER REGULATION FEATURES EMPLOYING PRIORITY OF PULSE FEEDBACK

Billy Harold Hamilton, Summit; Frederick Francis Kunzinger, and Robert Edward Schroeder, both of Parsippany, all of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed July 31, 1972, Ser. No. 276,709
Int. Cl. H02m 3/32
U.S. Cl. 321—2 8 Claims

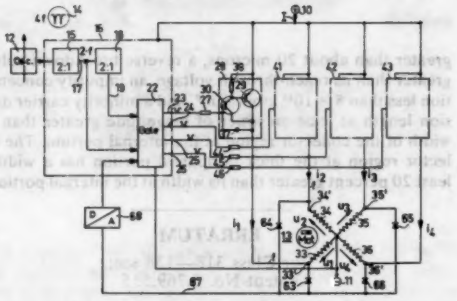


There is disclosed a dc-to-dc converter provided with dual-mode current and voltage regulation and a "soft" start characteristic in which a digital-type feedback control is obtained based upon the relative priority of the arrival of the respective feedback pulses at the driving circuit for the converter transistors. In addition, a shut-down circuit checks both of two redundant feedback circuits for the absence of feedback pulses for a prescribed time before triggering shutdown. Either of the two redundant feedback circuits is individually capable of regulating the output voltage or the output current if the output load is balanced. With a high impedance unbalanced load, the voltage regulator on the output lead that tends to experience high voltage takes control and limits the maximum output voltage.

3,769,569
CONTACTLESS INVERTER CIRCUIT PARTICULARLY TO SUPPLY POLYPHASE A-C MOTORS FROM A D-C SOURCE

Benno Doemen, St. Georgen/Schwarzwald, Germany, assignor to Papst-Motoren KG, Georgen, Germany

Filed May 19, 1972, Ser. No. 255,061
Claims priority, application Germany, May 28, 1971, P 21 26 764.1; Mar. 11, 1972, P 22 11 873.6
Int. Cl. H02m 7/52
U.S. Cl. 321—5 16 Claims

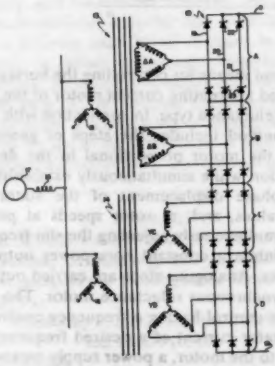


A clock supplies clock pulses at a predetermined frequency. A group of controlled switching circuits are interconnected between the d-c supply source and the load, typically the windings of a polyphase a-c asynchronous motor. The controllable semiconductor switching circuits are controlled from the clock source to be switched between ON and OFF state to selectively, sequentially energize the windings of the motor. To provide better approach of the pulses to sinusoidal wave shape, a delay circuit is connected between the controlled semiconductor switching circuit to delay the trailing flanks of the pulses passed by the switching circuit upon change from ON to OFF of the semiconductor switches.

3,769,570
AC-DC CONVERTER CIRCUIT FOR MINIMIZING HARMONICS

Colin Mackenzie Stairs, Peterborough, Ontario, Canada, assignor to Canadian General Electric Company Limited, Toronto, Ontario, Canada

Filed Sept. 29, 1971, Ser. No. 184,821
Int. Cl. H02m 1/12
U.S. Cl. 321—9 R 10 Claims



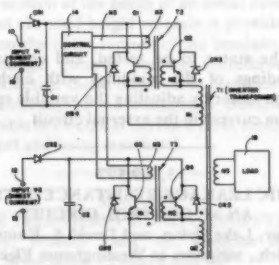
According to the invention a converter group has four bridges A to D of controlled coverters connected in series in

the order A, B, C and D respectively. Each bridge A and B is connected to a separate delta winding of one three phase transformer, and each bridge C and D is connected to a separate wye winding of another three phase transformer. Each transformer has a wye winding connected to an AC system. The converters in the respective legs of the bridges are fired in the proper phase sequence at approximately 15 electrical degree intervals. This is a hybrid combination of two 12-pulse groups that is controlled to operate as an imperfect 24-pulse converter group so as to reduce the total magnitude of the 11th and 13th harmonics which are generated by the converters.

3,769,571
POWER INVERTER CIRCUIT

Bruce L. Wilkinson, Torrance, Calif., assignor to Pioneer Magnetics, Inc., Santa Monica, Calif.

Filed Mar. 21, 1973, Ser. No. 343,509
Int. Cl. H02m 7/52
U.S. Cl. 321—45 R **10 Claims**

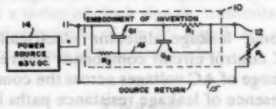


A power supply is provided which is capable of operation from either of two power sources, such as on normal power from the usual alternating-current mains, or emergency power from a stand-by battery; and which will automatically switch from one source to another as the need arises. The power supply includes a transformer having at least two primary windings, and first and second input circuits respectively connected to the two primary windings and to the two sources. The preferred source will be selected by the power supply so long as its voltage is equal to or greater than the voltage of the secondary source.

3,769,572
TWO TERMINAL CURRENT LIMITER

Leon S. Doubt, San Gabriel, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Jan. 18, 1971, Ser. No. 106,965
Int. Cl. G05f 1/58, 1/64
U.S. Cl. 323—4 **5 Claims**

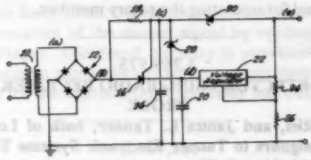


A two terminal current limiter is disclosed. The current limiter includes two (first and second) transistors and two resistors, one of which, acting as a sensing resistor, is connected in series with the collector-emitter path of the first transistor between the said two terminals. When sufficient voltage drop occurs across the sensing resistor, the second transistor is biased into conduction, which together with the second resistor, controls the biasing of the first transistor, thereby controlling the current flow therethrough.

3,769,573
SERIES REGULATOR HAVING REGULATION FOR VARIATIONS IN LINE VOLTAGE AND LOAD DEMAND

John R. Scantlin, Los Angeles, Calif., assignor to Transaction Technology, Inc., Los Angeles, Calif.

Filed Aug. 31, 1972, Ser. No. 285,504
Int. Cl. G05f 1/58
U.S. Cl. 323—9 **10 Claims**

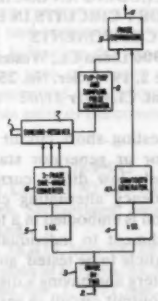


A voltage regulator for use with a series regulator having a relatively constant output voltage with a range of input voltages and including a capacitor coupled across the input to the series regulator to filter and store the input to the series regulator, a source of d-c voltage, and a switch having a gating input interconnecting the source of d-c voltage with the capacitor for providing switching of the source of d-c voltage to the capacitor to charge the capacitor when the voltage across the capacitor falls below a predetermined level. A pair of Zener diodes one of which is connected between the output of the series regulator and gating input and the other of which is connected between the gating input and the low side of the capacitor provides protection against overload and over voltage conditions. A capacitor is connected between the junction of the Zener diodes and the low side of the capacitor and with the charging rate of the capacitor controlling the point of switching.

3,769,574
SYNCHRONISING SYSTEMS

John David Millward, Kimpton, Hitchin, England, assignor to Decca Limited, London, England

Filed Mar. 12, 1973, Ser. No. 340,014
Claims priority, application Great Britain, Mar. 14, 1972, 11,862/72
Int. Cl. H04n 5/04
U.S. Cl. 323—101 **3 Claims**



A system for synchronising a rotary member with a series of synchronising pulses, suitable for use in synchronising a film

projector with a television scanning raster comprises a rotary member; a divider for obtaining two repetitive signals whose frequency is relatively small from a series of synchronising pulses fed to the said divider; a generator for providing in response to a first of the repetitive signals a repetitive sawtooth wave form of the same fundamental frequency as the first repetitive signal; a synchro-resolver having a stator arranged to be energised by a polyphase signal derived from the second of the two repetitive signals, and a rotor arranged to be driven in accord with the movement of the rotary member; a further generator responsive to the output of the synchro-resolver to provide a series of sampling pulses at a frequency proportional to the output of the synchro-resolver; and a comparator for comparing the phase of the sampling pulses with that of the repetitive sawtooth wave form so as to provide a control signal for operating the rotary member.

3,769,575

METAL DETECTOR USING RADIO RECEIVER AND R-F PROBE

Bruno A. Rist, and James L. Tanner, both of Los Angeles, Calif., assignors to Tanner Electronic Systems Technology, Inc., Northbridge, Calif.

Filed June 30, 1971, Ser. No. 158,245
Int. Cl. G01v *3/12*
U.S. Cl. 324—3 **4 Claims**

A metal locating system is disclosed wherein a unitary R-F oscillator is disposed on a probe board including all necessary electrical components thereof and its power supply. The oscillator is operated at a frequency such that a harmonic thereof falls within the range of and is beat against the local oscillator signal of a typical inexpensive superheterodyne broadcast radio receiver. The receiver is used as a detector and produces an audible heterodyne whistle or beatnote. When the probe board is brought in proximity to a metallic object the R-F oscillator frequency is varied to produce an audible change in the beatnote frequency. The radio may be located remotely from the probe as, for example in the user's pocket.

3,769,576

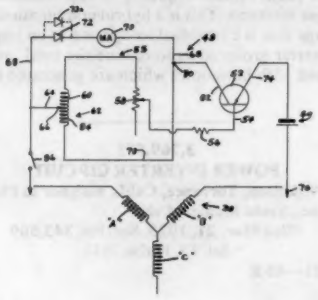
APPARATUS INCLUDING AN OSCILLATOR FOR DETECTING SHORT CIRCUITS IN ELECTRICAL COMPONENTS

Anthony B. Norkaitis, 906 Liden Ct., Western Springs, Ill.

Filed June 2, 1972, Ser. No. 259,268
Int. Cl. G01r *31/02*
U.S. Cl. 324—51 **7 Claims**

An apparatus for testing short circuit in electrical components such as motor or generator stators having plural windings with extremely low direct current resistance but measurable high frequency alternating current impedance. Preferably, the invention is embodied in a tester unit which includes leads for attachment to individual current windings forming a part of the article to be tested, and a transistor oscillator operated by a battery and having a display device such as a milliammeter in the output circuit in series with a diode or the like. A feedback circuit parallel with the milliammeter and the exterior load includes a center tapped inductor and a variable resistor in series with each other and controlling base current.

The method includes operating the oscillator so as to produce a pulsating DC current in the output circuit, and successively connecting the exterior leads to each individual



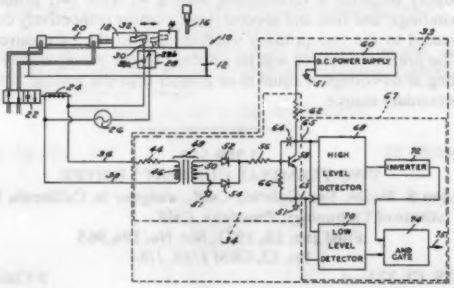
winding in the stator to be tested, and comparing the impedance readings of the windings with each other after calibrating the meter by adjusting the variable resistor to provide maximum current in the external circuit.

3,769,577

ELECTRONIC LEAKAGE RESISTANCE DETECTOR FOR AN AC CONTROL CIRCUIT

Earl J. Schnur, Lake Orion, and David A. Kamulski, Detroit, both of Mich., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 11, 1971, Ser. No. 114,503
Int. Cl. G01r *31/02*
U.S. Cl. 324—51 **2 Claims**

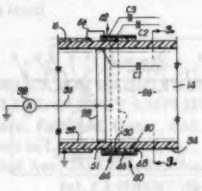


An electronic leakage detector electrically connected across an AC control circuit component and responsive to a preselected range of AC voltages across the component to indicate the presence of leakage resistance paths in the control circuitry. The detector comprises a converter which monitors the AC voltage across the component to provide a DC signal which varies in accordance with the magnitude of the AC input and an electronic logic circuit responsive to a range of DC signals to indicate when the AC voltage is within the preselected range. The leakage detector is physically compact and in no way impairs the conventional operation of the control circuitry to which it is connected.

3,769,578
GUARD ELECTRODE APPARATUS FOR BOOM OF INSULATED AERIAL DEVICE

Jerry A. Staley, Centralia, Mo., assignor to A. B. Chance Company, Centralia, Mo.

Filed Apr. 13, 1972, Ser. No. 243,559
Int. Cl. G01r 31/02, 31/12
U.S. Cl. 324—54 **7 Claims**

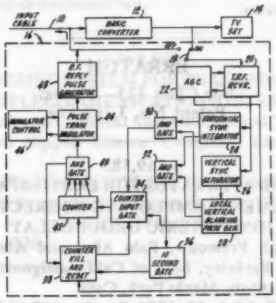


Apparatus for measuring leakage current passing through the insulative section of the boom of an aerial device for lifting workmen to an elevated height wherein is provided a conductive element on the outer surface of the insulative section for collecting leakage current passing therethrough, and a grounded conductive shield disposed in electrically insulated, overlying relationship to the conductive element to prevent extraneous ambient electrical currents from reaching the conductive element and being measured.

3,769,579
CABLE TELEVISION MONITORING SYSTEM

Ralph Harney, Wonder Lake, Ill., assignor to Oak Electro/Netics Corporation, Crystal Lake, Ill.

Filed Mar. 31, 1972, Ser. No. 239,996
Int. Cl. H04b 3/02; G04n 7/18; H04q 5/16
U.S. Cl. 325—31 **10 Claims**



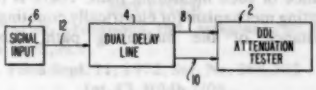
A system for interrogating TV receivers connected to a common distribution system, for example a cable or the like, in which a start signal activates transponders at each of the TV receivers and a series of clock signals, transmitted during the vertical blanking interval of the TV signal, are used to determine the reply periods of the transponders.

3,769,580
DELAY LINE ATTENUATION TESTER

Dewie E. Black, Dearborn Heights, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 14, 1972, Ser. No. 280,267
Int. Cl. G01r 27/28
U.S. Cl. 324—57 R **7 Claims**

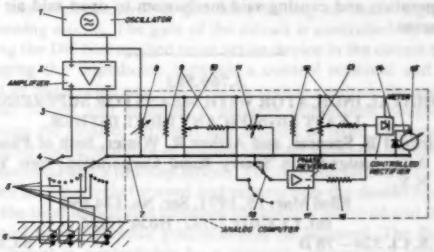
An electronic circuit for measuring the attenuation of a signal through delay lines. The attenuation measurements are accomplished by converting the output signals from the delay lines to direct current voltages which equal the peak-to-peak amplitude of the output signals. These direct current voltages are then compared electronically to a precision reference voltage which equals the peak-to-peak amplitude of the input signal to the delay lines. Direct measurements are then taken of the attenuation of the output signal by reading the direct current voltages. Additional circuitry is provided to make a pass-fail decision automatically where certain limits have been established for the attenuation of the delay line output signals.



3,769,581
APPARATUS FOR MEASURING THE DRY UNIT WEIGHT OF A SOIL

Fritz Konig, Wuppertal, and Klaus Konig, Unterbach, both of Germany

Continuation of Ser. No. 780,966, Dec. 4, 1968, abandoned. This application Oct. 14, 1971, Ser. No. 189,325
Int. Cl. G01r 27/02
U.S. Cl. 324—65 R **9 Claims**



Apparatus for measuring the dry unit weight of a soil, either directly or with reference to a known soil variable (e.g., the Proctor density) by means of a measuring probe containing two electrodes in the soil under investigation. The measuring probe is energized with a constant a.c., voltage, and is connected in series to a measuring resistance at which a voltage drop occurs proportional to probe current (I). The voltage tapped at measuring resistance overlaps a continuously adjustable part of the said constant a.c. voltage, and, in a phase-sensitive rectifying indicating device, a proportion, continuously adjustable from zero, of the sum voltage obtained by the superposition is superposed on a second component, continuously adjustable from zero, of the constant a.c. voltage.

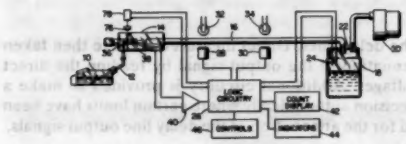
3,769,582
PARTICLE COUNTING APPARATUS

Kurt Schoen, Zurich, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Division of Ser. No. 38,039, May 18, 1970, Pat. No. 3,665,295, which is a continuation of Ser. No. 35,384, , abandoned. This application Nov. 1, 1971, Ser. No. 194,387
Int. Cl. G06m 11/04; H03k 21/18
U.S. Cl. 324—71 CP **8 Claims**

An apparatus for counting particles suspended in a fluid, comprising a conductivity cell having air vent means and means defining an electrical resistance measuring path.

Mechanism serves to selectively open and close the air vent means. There is also provided a flask containing a quantity of particle containing fluid and a conveying system for transporting a quantity of such particle containing fluid from the flask through said electrical resistance measuring path of said conductivity cell. Each particle upon passing said electrical resistance measuring path brings about a measurable change of the resistance of such measuring path. There is further provided counting mechanism for electrically counting changes in such resistance of the measuring path, this counting



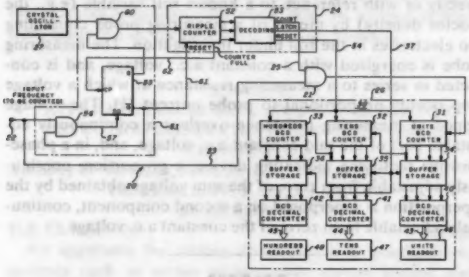
mechanism including a volumetrically calibrated measuring tube. Electric circuit means including first and second readout means are spaced at a predetermined distance from one another along said volumetrically calibrated measuring tube, said electric circuit means generating a starting signal commencing the counting operation and causing the aforesaid mechanism to tightly close said air vent means and further generating a switch-out signal for terminating the counting operation and causing said mechanism to open said air vent means.

3,769,583

DIGITAL INDICATOR WITH MEANS FOR SUPPRESSING LEAST SIGNIFICANT DIGIT DITHER

Richard B. Spencer, and Arthur R. Winter, both of Phoenix, Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 15, 1971, Ser. No. 124,091
Int. Cl. G01r *23/02*; H03k *17/26*
U.S. Cl. 324—78 D **5 Claims**



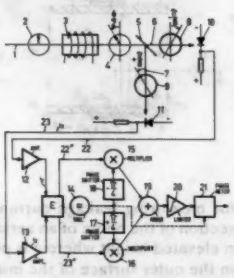
A digital indicator comprising a counter for providing digital representations of the frequency of an input signal. The input signal is applied to the counter through a gate responsive to a periodically occurring timing pulse. The timing pulse is derived from a second counter that receives fixed frequency clock pulses through a second gate. Synchronizing means, responsive to the input signal, operate the second gate whereby the timing pulse is controlled to occur in timed relation to the input signal.

3,769,584

ELECTRO-OPTICAL MEASURING APPARATUS

Paul Iten, Luzern; Jiri Mastner, Niederrohrdorf, and Francois Mottier, Zurich, all of Switzerland, assignors to Aktiengesellschaft Brown Boveri & Cie, Baden, Switzerland

Filed May 13, 1971, Ser. No. 143,029
Claims priority, application Switzerland, May 26, 1970, 7784/70
Int. Cl. G02f *1/22*; G01r *19/00*
U.S. Cl. 324—96 **12 Claims**



An electro-optical measuring apparatus includes a magneto-optical element around which is wound an electrical conductor carrying a current to be measured. The plane of polarization of a linearly polarized light beam in passing through the magneto-optical element is rotated by an amount which varies with the magnitude of the current, the beam is then passed through a beam splitter to establish two beam components which are then shifted in phase to establish a phase quadrature relationship, and these phase-shifted beam components are then passed to evaluating circuits for comparison. These evaluating circuits include an arrangement wherein any variations in the values of certain constants in the circuits are compensated out thus to improve the accuracy of the measurements.

ERRATUM

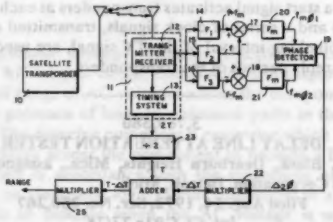
For Class 325—31 see:
Patent No. 3,769,579

3,769,585

METHOD AND APPARATUS FOR EARTH-SPACE RANGE MEASUREMENTS EMPLOYING CORRECTION FOR IONOSPHERIC GROUP DELAY

Edward Joseph Fremouw, Palo Alto, and Alan Alexander Burns, Jr., Berkeley, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Feb. 22, 1971 Ser. No. 117,606
Int. Cl. H04b *1/00*
U.S. Cl. 325—67 **6 Claims**



Excess ionospheric group-delay correction by direct measurement along the transmission path of VHF signals em-

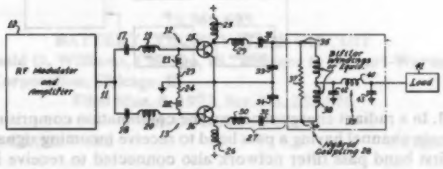
ployed for range finding is achieved by transmitting a signal having a triad of frequencies $f+f_m$, f and $f-f_m$. The triadic frequencies are first separated at the receiver. The frequency f is then mixed with each of the other two to obtain two differences. The phase difference $\Delta_1\phi$ between the two differences, i.e., the second difference of phase shift versus frequency, a measure of dispersion, is proportional to the integral of electron density along the path and, therefore, to excess inonospheric group delay. To make range corrections, the relationship of $\Delta_2\phi$ to ΔT (given at $\Delta T = f/4\pi f_m^2 \Delta_2\phi$) is used.

3,769,586

HYBRID COUPLER FOR RADIO TRANSMITTER HAVING PARALLEL OUTPUT AMPLIFIER STAGES

Jonas M. Shapiro, Fairfield, Conn., and Joel Julie, Bronxville, N.Y., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Apr. 26, 1971, Ser. No. 137,339
Int. Cl. H04b 7/02
U.S. Cl. 325—157 **6 Claims**



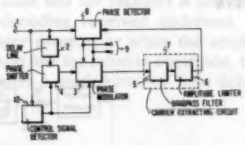
A hybrid coupling means to couple a plurality of parallel output amplifier stages of a radio transmitter or the like to an antenna or load circuit. A two-port combining hybrid is used to combine the power output of two parallel transistor amplifiers to supply a single power output to the load, while preventing damage to one amplifier if the other amplifier becomes open or short-circuited. A pi-section filter network connected between the hybrid coupling means and the antenna protects the amplifier in case the antenna is accidentally short-circuited or disconnected.

3,769,587

SYNCHRONIZING SYSTEM FOR PHASE-MODULATION TELECOMMUNICATION SYSTEM

Yoshio Matsuo, and Shigetoki Sugimoto, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Oct. 6, 1972, Ser. No. 295,643
Claims priority, application Japan, Oct. 19, 1971, 46/83063
Int. Cl. H04b 1/16
U.S. Cl. 325—320 **6 Claims**



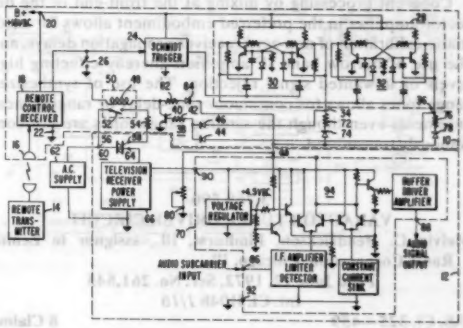
The burst acquisition time in a phase-modulated TDMA satellite communication system is reduced by means of a novel demodulator at a receiving station. The received carrier frequency is filtered out of the two-phase phase-modulated preamble word portion of the received signal and a reference carrier signal is extracted therefrom. The N-phase phase modulated information word portion is reverse phase-modulated and phase-shifted so that its carrier frequency has the same relative phase as that of the preamble word portion, and a reference carrier signal is extracted therefrom. Consequently, the reference carrier is continuously recovered across the boundary of the preamble and information word portions and is available to demodulate the burst signal.

3,769,588

REMOTE CONTROL SYSTEM FOR A TELEVISION RECEIVER

Lyle Bruce Juroff, Greenwood, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 11, 1972, Ser. No. 288,202
Int. Cl. H04b 1/06
U.S. Cl. 325—392 **7 Claims**



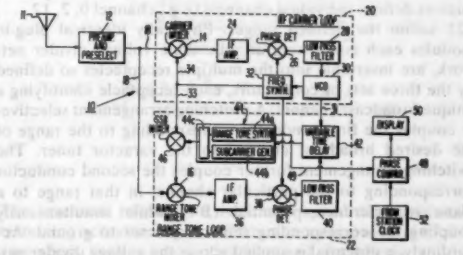
A television receiver is provided having an audio signal processing circuit. The gain of the circuit is controlled by adjusting the DC bias applied to an active device in the circuit by changing the impedance between a control terminal and a point of fixed reference potential. A system controls the gain of the circuit and includes a variable impedance coupled between the control terminal and a point of fixed reference potential and a plurality of diodes coupled between the control terminal and a flip-flop circuit. The flip-flop circuit is controlled to selectively forward and reverse bias the diodes such that the total impedance between the control terminal and the point of fixed reference potential may be adjusted. The flip-flop circuit is controllable by a remotely transmitted signal and a switch positioned on the television receiver.

3,769,589

RATE AIDED RANGING AND TIME DISSEMINATION RECEIVER

Robert Frank Buntschuh, Hightstown, and Henry George Rouland, Cherry Hill, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 16, 1971, Ser. No. 208,762
Int. Cl. H04b 1/16
U.S. Cl. 325—419 **7 Claims**



A receiver is described for processing tone ranging signals from a time dissemination satellite such as TIMATION II. The

receiver derives either receiver-station time (clock synchronization) or position location of the receiver-station with respect to the satellite with significant accuracy. The receiver generates a set of range tones as duplicates of those received from a satellite. They are developed as frequency coherent from a phase lock loop synchronized to the signal carrier frequency. A second loop, having a frequency synthesizer locked to the carrier loop, a mixer, a narrow band amplifier and a phase detector mix the locally generated range tones with a local oscillator signal which is frequency coherent with the carrier. This mixer output is then mixed with the receiver modulation to null out error between the received and local range tones. An output signal consisting of the lowest range tone signal is representative of the tone modulation from the satellite.

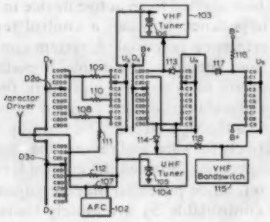
Coherent processing by mixing at the front-end of the detector amplifier in the preferred embodiment allows for automatic calibration of non-zero receiver propagation delays, and the use of narrow band IF amplifiers thereby effecting high levels of unwanted signal rejection. The use of synthesized range tones allows for continuous time-delay or ranging measurements even though the satellite range tones are not continuously transmitted.

3,769,590

VARACTOR TUNER DRIVER CIRCUIT

Melvin C. Hendrickson, Elmhurst, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed June 12, 1972, Ser. No. 261,845
Int. Cl. H04b 1/16
U.S. Cl. 325—459 **8 Claims**



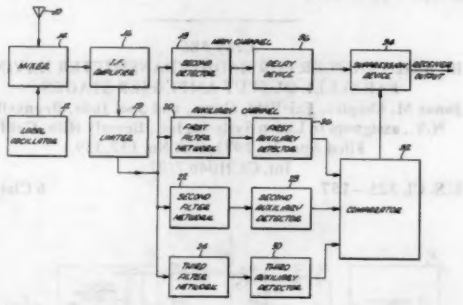
A varactor driver circuit in a television receiver for providing a varactor tuner with unique control voltages representative of particular broadcast channels selected by the viewer. The varactor driver circuit utilizes first, second and third sets of electrically isolated conductors arranged in a matrix configuration physically defining individual broadcast channels. Each one of a first set of conductors defines a range of broadcast channels (e.g., channels 20–29) while each of the second conductors together with an associated one of the third conductors defines individual channels (e.g., channel 0, 2, 12 . . . , 82) within the defined ranges. Physically identical plug-in modules each comprising an adjustable voltage divider network, are insertable into the multiple receptacles so defined by the three sets of conductors, each receptacle identifying a unique broadcast channel. A switching arrangement selectively couples the first conductor corresponding to the range of the desired broadcast channel to the varactor tuner. The switching arrangement further couples the second conductor corresponding to the particular channel in that range to a plane of reference potential (B+) while simultaneously coupling the corresponding third conductor to ground. Accordingly, a potential is applied across the voltage divider network, and a control voltage unique to that particular broadcast channel is coupled through the first conductor to the varactor tuner.

3,769,591

FREQUENCY SELECTIVE PULSE RECEIVER

Paul Merrill Brown, East Whittier; Donovan Chester Davis, Pasadena; James Edward Gross, Covina, and Richard Gordon Sweet, Palo Alto, all of Calif., assignors to S. Gilfillan Corporation, Los Angeles, Calif.

Filed Nov. 14, 1956, Ser. No. 622,217
Int. Cl. H04b 1/10
U.S. Cl. 325—474 **8 Claims**



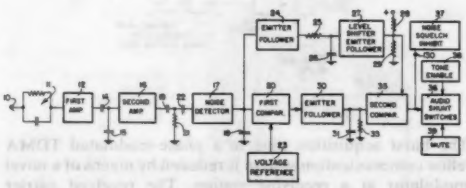
3. In a radiant energy receiver, the combination comprising: a main channel having a pass bend to receive incoming signals; a first band pass filter network also connected to receive incoming signals and having a pass band at the center of said main channel pass band; a second band pass filter network connected to receive incoming signals and having a pass band adjacent that of said first filter network; subtraction means responsive to the output signals of said filter networks for producing a control signal having a first magnitude when the output signal of said first pass band filter network is greater than that of said second band pass filter network and having a second and different magnitude when said second band pass filter network has an output signal magnitude greater than that of said first band pass filter network; and means responsive to said control signal for automatically passing the output of said main channel when said control signal is of said first magnitude and for suppressing the output of said main channel when said control signal is of said second magnitude.

3,769,592

SQUENCH CIRCUIT WITH TIME DELAY VARIABLE IN ACCORDANCE WITH STRENGTH OF RECEIVED SIGNAL

Roy H. Espe, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed July 14, 1971, Ser. No. 162,576
Int. Cl. H04b 1/10
U.S. Cl. 325—478 **15 Claims**



Squelch circuit for communications receiver with relatively long time delay to prevent squelch action because of flutter or fade when operating on weak signals, with effective short time delay on strong signals to eliminate the squelch tail, and with

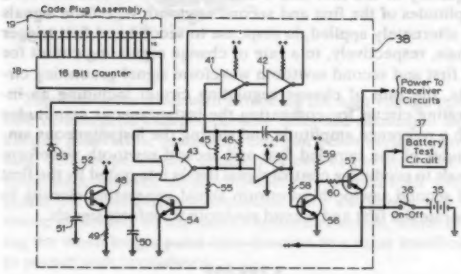
continuously variable delay as an inverse function of signal strength at intermediate signal levels. A voltage which varies with signal strength (inversely with noise) is derived from receiver noise and provides a control voltage which is compared with a reference voltage to turn on the audio when a signal of usable strength is received. A circuit which responds to the level of the derived voltage operates to modify either the control voltage or the reference voltage so that the control voltage is only slightly greater then the reference voltage when strong signals are received, and is substantially greater than weak signals. Upon termination of a received signal the control voltage decays and acts to turn off the audio in a length of time proportional to the difference in control and reference voltage. This results in fast squelch action for strong signals, so that the squelch tail will be quite short, slower squelch action for weak signals, to give flutter and fade protection, and continuously variable squelch action for signals of intermediate strengths.

3,769,593

BATTERY CONSERVATION CIRCUIT

Ronald O. Williams, Chicago, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Mar. 8, 1972, Ser. No. 232,878
Int. Cl. H04b 1/06
U.S. Cl. 325—492 **3 Claims**



A battery conservation circuit for a selective paging receiver adapted to receive subscriber address-bearing code signals of a specific format comprises a timing circuit which periodically energizes the receiver for short periods of time to determine if valid address-bearing signals having the specific format are present. If such signals are present, the timer is latched in the on state and the receiver is continuously energized to permit decoding received addresses. When valid signals are no longer present, or when the amplitude of the reserved signal is too low for reliable operation, the timer circuit is unlatched after a predetermined time delay to resume the battery-saving cycle.

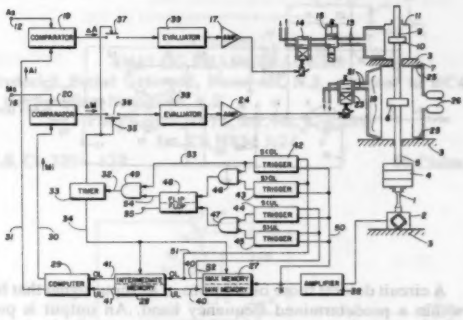
3,769,594

PEAK VALUE MEASURING AND REGULATING CIRCUIT

Carl-Martin Wawra, Bensheim-Auerbach, and Ivan Chudey, Ober-Ramstadt, both of Germany, assignors to Carl Schenck Maschinenfabrik GmbH, Darmstadt, Germany

Filed Mar. 27, 1972, Ser. No. 238,431
Int. Cl. H03k 5/00
U.S. Cl. 328—151 **4 Claims**

The present peak value measuring and regulating circuit arrangement includes at least one maximum signal memory and one minimum signal memory for storing oscillation representing signals for a constant length of storage time ($t1$) during which logic circuit means controlled by the upper signal value or by the lower signal value actuate a timer which closes signal path means to supply either differential signals or actual signals representing certain load conditions to evaluating and regulating means for an evaluating time duration (Δt) which is independent of the frequency of said oscillation. At the end of the storage time ($t1$) the timer erases the stored information.

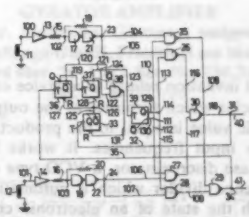


3,769,595

PROCESS AND CIRCUIT ARRANGEMENT FOR THE DISCRIMINATION OF MUTUAL REVOLUTIONAL SPEEDS OF A PLURALITY OF REVOLVING MEMBERS

Junichiro Ooya; Katsuki Takayama, and Kazutaka Kuwana, all of Kariya City, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 1, 1971, Ser. No. 203,560
Claims priority, application Japan, Dec. 1, 1970, 45/106578
Int. Cl. H03b 3/04
U.S. Cl. 328—133 **9 Claims**



The invention relates to a rotational speed descriminator determining occasional speed differences among several rotating members, such as automotive front and rear wheels.

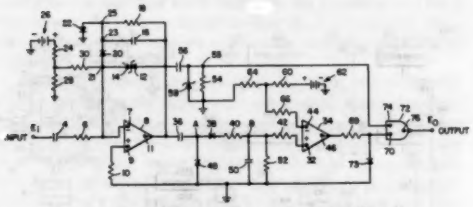
The main feature resides in the detection of two or more speed-responsive pulse signals of a first signal series as measured between two successive pulse signals belonging to a second series of speed responsive pulse signals.

3,769,596

OSCILLATION DETECTION CIRCUIT

George H. Peersch, Randolph Township, Morris County, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Mar. 2, 1972, Ser. No. 231,187
Int. Cl. H03d 3/04
U.S. Cl. 328—138 7 Claims



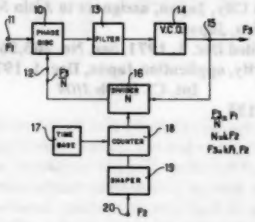
A circuit detects those oscillations of an input signal that fall within a predetermined frequency band. An output is provided in the form of a logic signal commensurate with the detected oscillations.

3,769,597

PARAMETRIC DEVICE FOR MULTIPLYING FREQUENCIES

Ferdy Mayer, 18 rue Thiers, Grenoble, France

Filed Jan. 21, 1972, Ser. No. 219,746
Claims priority, application France, Jan. 22, 1971, 7102913
Int. Cl. G06g 7/16
U.S. Cl. 328—160 10 Claims



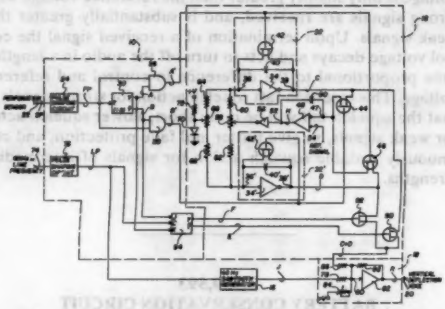
The present invention relates to a device energized by two input frequencies which furnishes at the output a frequency whose numeric value is equal to the product of the numeric values of the input frequencies. It works by cooperation between a phase discriminator, a VCO-type oscillator and a variable-sequence divider which is automatically set in accordance with the state of an electronic counter which is excited by one of the two frequencies. This counter which is synchronized with a time base operates like an electronic frequency-meter adjusting the variable-sequence divider at the end of each counting interval. The basic multiplier circuit is also used to provide modified embodiments, one of which produces the square of an input frequency, another the inverse of an input frequency, the third the square root of an input frequency. Different applications of these circuits are presented for different problems of measuring physical quantities.

3,769,598

GAIN CONTROL CIRCUIT

Carl N. Schauffele, Rochester, and Harry L. Valenta, North Chili, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 15, 1971, Ser. No. 189,675
Int. Cl. H03k 4/08
U.S. Cl. 328—185 15 Claims



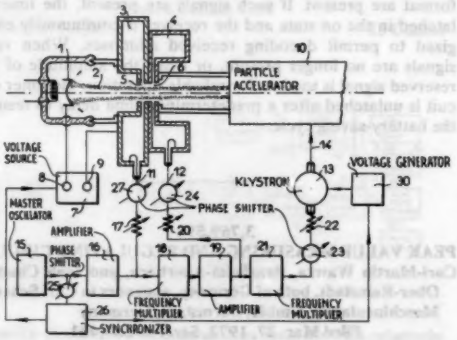
A method and apparatus for regulating the rate of change of first and second sawtooth waveform signals. First and second, 180° out-of-phase, sawtooth waveform signals are generated by sawtooth waveform signal generating circuits in response to first and second trigger signals, each of the sawtooth waveform signals having a frequency equal to the first frequency of the first and second signals. The instantaneous amplitudes of the first and second sawtooth waveform signals are alternately applied, in response to second and first trigger signals, respectively, to a rate of change regulating circuit for the first and second sawtooth waveform signal generating circuits, the rate of change regulating circuit including an integrating circuit for comparing the instantaneous amplitudes with a reference amplitude and storing the instantaneous amplitudes of the sampled first and second sawtooth waveform signals to produce a control signal that is integrated by the first and second sawtooth waveform signal generating circuits to generate the first and second sawtooth waveform signals.

3,769,599

PARTICLE PREACCELERATOR ARRANGEMENT

Hubert P. Leboutet, and Andre M. Bensussan, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 22, 1971, Ser. No. 136,447
Claims priority, application France, Apr. 28, 1970, 7015527
Int. Cl. H01j 23/20
U.S. Cl. 328—233 8 Claims



The invention relates to an arrangement for accelerating, to a predetermined velocity at least one bunch from a bunched

beam of particles, the length of said bunch corresponding to one cycle of the high frequency of the accelerator.

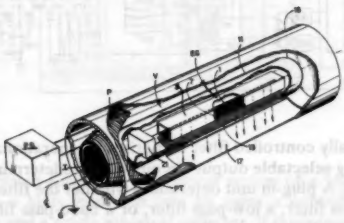
In this arrangement the injection voltage V of the beam is raised to a value larger than the cut-off voltage V_c of the accelerator, exclusively during a short period. Said injection voltage V is created by the addition of a pulsed voltage V_0 and high-frequency voltages V_1 and V_2 generated in resonant cavities 3 and 4 disposed in the trajectory of the beam and tuned respectively to a sub-multiple of said high frequency.

3,769,600

METHOD OF AND APPARATUS FOR PRODUCING ENERGETIC CHARGED-PARTICLE EXTENDED-DIMENSION BEAM CURTAINS AND PULSE-PRODUCING STRUCTURES THEREFOR

A. Stuart Denholm, Lincoln, and Gordon K. Simcox, Lexington, both of Mass., assignors to Energy Sciences, Inc., Burlington, Mass.

Filed Mar. 24, 1972, Ser. No. 233,671
Int. Cl. H01j *23/18*
U.S. Cl. 328—233 **19 Claims**



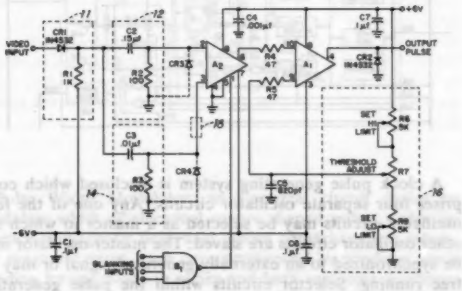
This disclosure deals with extending the high voltage operation of energetic charged-particle extended-dimension beam curtain generators, preferably electron beam curtain generators, without permitting breakdown between evacuated electrode structures, by employing specially shaped high voltage pulses of substantially comparable very steep rise and fall times, preferably by resonant transformer action, while limiting the much longer pulse time duration to a value insufficient to permit such breakdown.

3,769,601

FAST AVERAGING NOISE SUMMING CIRCUIT FOR AUTOMATIC SIGNAL DETECTION

William J. McEvoy, 320 Lafayette Dr., Oxnard, Calif.

Filed June 19, 1972, Ser. No. 263,804
Int. Cl. H03d *3/00*
U.S. Cl. 329—110 **12 Claims**



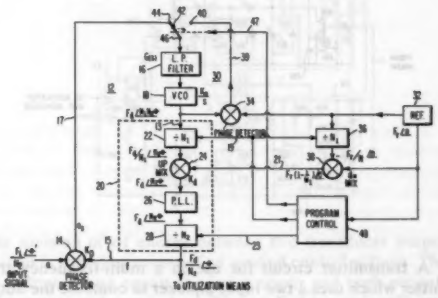
An electrical circuit adapted to provide reliable signal detection in the presence of varying noise levels. The circuit adjusts automatically so that a fixed signal to noise detection ratio is maintained, even though the receiver noise output varies as a function of frequency due to internal or external conditions. Two networks average receiver power simultaneously. One network has a long time constant (approximately 15μ sec.) while the other has a short time constant (approximately 1μ sec.). The receiver output is applied to the long time constant (LTC) and short time constant (STC) networks which provide inputs to a differential amplifier. When a signal is received, the differential amplifier produces an output pulse which is the difference between the slopes produced by the LTC and STC networks.

3,769,602

ANALOG PHASE TRACKER

Frederick Bethel Griswold, Roosevelt, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 7, 1972, Ser. No. 278,289
Int. Cl. H03d *3/24*
U.S. Cl. 329—122 **10 Claims**



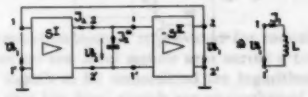
An analog phase tracker includes a phase tracking loop comprising a phase detector, a voltage controlled oscillator, a plurality of dividers and at least one multiplier for altering the phase of the voltage controlled oscillator output solely by dividing the oscillator output phase by the product of all of the dividers, while altering the frequency of the voltage controlled oscillator output by both dividing the frequency by the product of the divisors and multiplying the frequency by an integer equal to at least one of the divisors such that the frequency and phase of a signal derived by the dividers and multipliers is substantially the same as an applied periodic signal whose repetition rate may be any one of plurality of predetermined values.

3,769,603

GYRATOR AMPLIFIER

Dieter Herchner, Heilbronn, Germany, assignor to Licentia, Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed Mar. 20, 1972, Ser. No. 236,322
Int. Cl. H03f *3/18*
U.S. Cl. 330—13 **4 Claims**



A gyrator amplifier comprising first and second amplifier stages connected in push pull, the first stage being non-inverting and terminated by a capacitance and the second stage being inverting. Each stage includes transistors and resistances. The amplitudes of the a.c. voltage at the

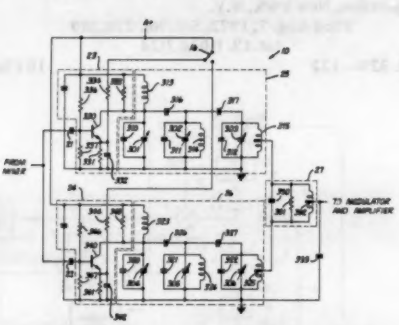
capacitance and at the input of the first stage and at the output of the second stage are equal. The steepness of the first stage is $S_I = \omega C$ and the steepness of the second stage is $S_{II} = 1/\omega L$, with C being the value of the terminal capacitance and L being the value of the inductance to be realised. The resistors are such that the gyrator is modulated uniformly at all potential points utilising the whole available D.C. voltage.

3,769,604

SWITCHED AND SUMMED FILTER ARRANGEMENT

Noel D. Atkinson, Indianapolis, Ind., assignor to General Aviation Electronics, Inc., Indianapolis, Ind.

Filed Mar. 12, 1971, Ser. No. 123,795
Int. Cl. H03f 3/68
U.S. Cl. 330—30 R **12 Claims**



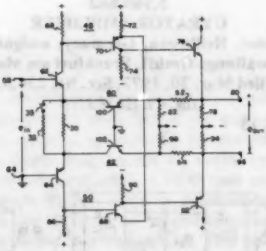
A transmitter circuit for use in a multi-frequency transmitter which uses a two input diplexer to combine the outputs of separate bandpass filters tuned to adjacent bands. A mixer is connected to one or the other of the filters depending upon the band in which the desired frequency occurs. The connection of the mixer to the filters is accomplished by transistor amplifiers which can be biased off to disconnect.

3,769,605

FEEDBACK AMPLIFIER CIRCUIT

Gordon D. Long, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 731,097, May 22, 1968, abandoned. This application Feb. 18, 1972, Ser. No. 227,370
Int. Cl. H03f 3/68
U.S. Cl. 330—30 D **12 Claims**



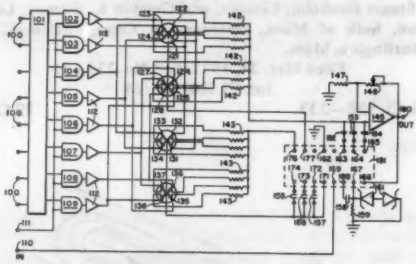
A feedback amplifier circuit comprises a high gain amplifier and a negative feedback path including a current source means, e.g. a high output impedance isolation device, for providing feedback current to the amplifier input. In a differential amplifier embodiment, a pair of high output impedance feedback isolation devices provide current to an input impedance means connected between the circuit input terminals. The circuit is largely independent of input voltage level and impedance, and as a result, the aforementioned input impedance means can be varied for changing gain while maintaining a high degree of common mode rejection.

3,769,606

DIGITALLY CONTROLLED FREQUENCY FILTER

Harold H. Henegar, Manassas, Va., assignor to The Singer Company, New York, N.Y.

Filed May 26, 1971, Ser. No. 147,021
Int. Cl. H03f 3/04
U.S. Cl. 330—66 **9 Claims**



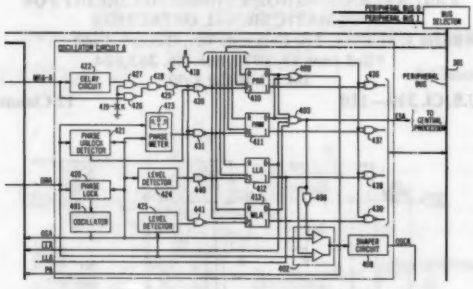
A digitally controlled filter comprises an operational amplifier having selectable output circuits with predetermined time constants. A plug-in unit determines whether the filter will be a high-pass filter, a low-pass filter, or a band-pass filter. The time constants in the circuit are determined by the application of a digital word to a plurality of switching gates to connect into the circuit one or more impedance combinations having predetermined time constants.

3,769,607

SWITCHED OSCILLATOR CLOCK PULSE GENERATOR

William Thelen, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 8, 1972, Ser. No. 232,873
Int. Cl. H03b 3/04
U.S. Cl. 331—2 **10 Claims**



A clock pulse generating system is disclosed which comprises four separate oscillator circuits. Any one of the four oscillator circuits may be selected as a master to which the other oscillator circuits are slaved. The master oscillator may be synchronized to an externally generated signal or may be free running. Selector circuits within the pulse generating system are responsive to level and phase errors to select a trouble-free oscillator to be the master, and in case of failure of any of the other oscillators, the signal from the master oscil-

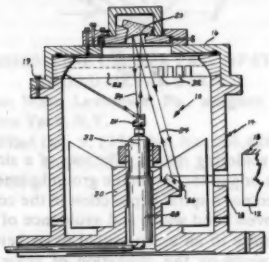
lator may be used directly to generate the desired output signal for the failed oscillator.

3,769,608

ULTRA HIGH FREQUENCY MECHANICAL Q-SWITCH

Leslie O. Vargady, Glendora, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 17, 1972, Ser. No. 254,143
Int. Cl. H01s 3/10
U.S. Cl. 331—94.5 Q 10 Claims



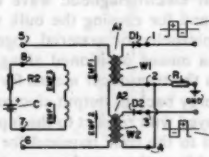
A Q-switch for use in the optical system of a laser which achieves a high repetition rate by using a central rotating reflector and a single spherical reflector. If the intersection of the axis of rotation and surface of the central reflector is exactly on the center of the spherical reflector, a beam entering on the axis of rotation and focused on the spherical reflector will be constantly retro-reflected while the central reflector rotates about its rotational axis.

3,769,609

PULSE WIDTH MODULATOR, AN ELECTRICAL CIRCUIT DEVICE TO MODULATE WIDTH OF ELECTRICAL SQUARE SHAPED PULSES

John Svalbe, Los Angeles, Calif., assignor to Magnetic Electronics, Inc., Los Angeles, Calif.

Filed Oct. 28, 1971 Ser. No. 167,259
Int. Cl. H03k 7/08
U.S. Cl. 332—12 1 Claim



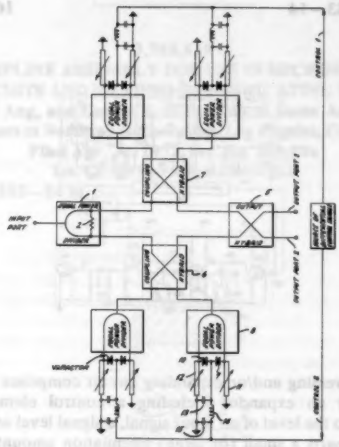
Pulse Width Modulator, an electrical circuit device to modulate width of electrical square shaped pulses under influence of magnetic field, said device comprising two saturable magnetic cores, each core surrounded by windings, each winding having diode in series and both said core-windings-diodes elements binded or surrounded firmly by control elements, whereby supplied square shaped pulses on windings with diodes are transferred to consumption circuit distorted into parts substantially independent from original.

3,769,610

VOLTAGE CONTROLLED VARIABLE POWER DIVIDER

Alex Savarin, Redwood City, and Guy Rader, Saratoga, both of Calif., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed June 15, 1972, Ser. No. 263,229
Int. Cl. H01p 5/04
U.S. Cl. 333—10 3 Claims



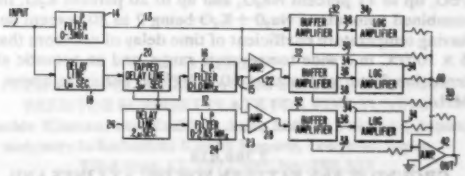
The division of r-f energy between two transducer output terminals is varied by means of an applied control voltage. The total output power equals the input power and both outputs have constant and equal phase. The applied power is split into two channels, each of which contains a variable phase shifter. The channels are combined in a 90° hybrid coupler so that the relative amplitude in the hybrid outputs is a function of the phase of the hybrid input signals. The phase shifters are voltage driven in opposition so that constant phase is achieved for all output power division ratios.

3,769,611

NOISE REDUCTION SYSTEM

Lee Edward Scaggs, Mountain View, Calif., assignor to CMX Systems, Inc., Sunnyvale, Calif.

Filed Aug. 25, 1971, Ser. No. 174,673
Int. Cl. H04b 1/64
U.S. Cl. 333—14 22 Claims



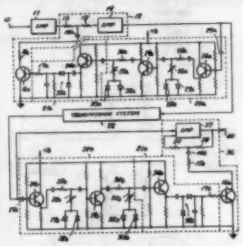
A noise reduction system is provided for reducing the effects of noise on low level signals sent across a transmission path. Input signals to be transmitted are logarithmically amplified such that low level signals are strengthened relative to higher level signals. At the opposite end of the transmission path the signals are logarithmically de-emphasized to reconstitute the original input signals. An improved band splitter divides the input signals into a plurality of sub-bands wherein all signal components in each sub-band have equal time delays associated therewith. Logarithmic amplification is provided for each sub-band.

3,769,612

COMPRESSING AND/OR EXPANDING CIRCUIT HAVING NON-LINEAR CONTROL CIRCUIT TO REDUCE MODULATION NOISE

Masami Yamazaki, Zama, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed Apr. 24, 1972, Ser. No. 246,721
Claims priority, application Japan, Apr. 24, 1971, 46/26958
Int. Cl. H04b *1/64*
U.S. Cl. 333—14 **16 Claims**



A compressing and/or expanding circuit comprises a compressor or an expandor including a control element. In response to the level of an input signal, a signal level adjusting circuit imparts a small (or large) attenuation amount to the input signal when the level is low (or high). A control circuit generates a control signal which is applied to the control element in the compressor or the expandor, in response to the level of an output signal from the signal level adjusting circuit. A signal passed through the compressing or the expanding circuit is substantially free from modulation noise.

3,769,613

ULTRASONIC WAVE DELAY LINE

Takahiro Inamura; Masao Ohno; Munehisa Tsunekawa, and Yasuyuki Nakata, all of Tokyo, Japan, assignors to Nippon Telegraph & Telephone Public Corporation and Nippon Kogaku K. K., both of Tokyo, Japan

Continuation-in-part of Ser. No. 811,964, April 1, 1969, abandoned. This application Sept. 2, 1971, Ser. No. 177,420
Claims priority, application Japan, Apr. 5, 1968, 43/22126
Int. Cl. H03h *7/30*; C03c *3/10*, *3/04*
U.S. Cl. 333—30 R **6 Claims**

An ultrasonic wave delay line comprising a delaying medium made up of a glass having a composition of, by weight, 57 to 78 percent SiO_2, 0.5 to 9 percent Al_2O_3, 16 to 19 percent PbO, up to 11 percent Na_2O, and up to 20 percent K_2O, the combined amounts of $Na_2O + K_2O$ being 9 to 20 percent and having temperature coefficient of time delay of not more than 5×10^{-6}/°C in a wide temperature range, and an acoustic attenuation factor of less than 10×10^{-3} dB per cycle above 1 MHz.

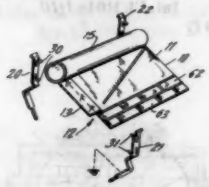
3,769,614

GROUND PLANE PATTERN FOR DELAY LINES AND METHOD OF ASSEMBLY

Howard Bernstein, New York, N.Y., assignor to Bel Fuse Inc., Jersey City, N.J.

Filed Apr. 27, 1972, Ser. No. 248,056
Int. Cl. H03h *7/30*
U.S. Cl. 333—31 R **4 Claims**

A novel ground plane structure for a delay line in which a thin insulating carrier such as mylar has the ground plane printed thereon. The carrier is then placed on an insulating tube with the ground plane electrical structure on the inside against the face of the tube and the coil wound on the insulating carrier, the insulating carrier thereby providing controlled insulating spacing between the coil and the ground plane. A connection is made to the ground plane by means of an adhesive copper tape which engages a substantial portion at the edge of the surface of the printed ground plane electrical structure and extends beyond the insulated carrier; this copper extension serves as a connector and as a heat sink, avoiding thermal damage to the insulating carrier during soldering, where soldering occurs. The use of a single diagonal discontinuance or gap section in the ground plane printed surface which becomes a spiral gap section in the completed coil provides improved band width and avoidance of ripple in the time delayed pulse to an extent equal to or better than that previously obtained by the utilization of separate but connected ground plane electrical sections.

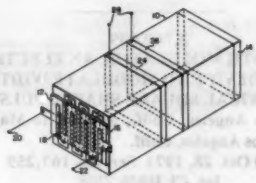


3,769,615

TAPPED PRAETERSONIC BULK DELAY LINE

John de Klerk, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 28, 1972, Ser. No. 266,950
Int. Cl. H03h *7/30*
U.S. Cl. 333—30 **8 Claims**



Praetersonic delay line means comprising transducer means for converting input electromagnetic wave energy to bulk sonic wave energy and for causing the bulk wave energy to traverse a body of piezoelectric material, together with electromagnetic antenna means positioned along the body at a point removed from the transducer means for converting the bulk sonic wave energy back to output electromagnetic wave energy which is delayed with respect to the input wave energy by an amount equal to the time required for the bulk sonic wave energy to travel from the transducer means to the antenna means.

3,769,616

SOLID STATE RADIOFREQUENCY CIRCUITS

Digjit Singh, Waltham, Mass., assignor to Bell & Howell Company, Chicago, Ill.

Filed Feb. 10, 1972, Ser. No. 225,203
Int. Cl. H03h *13/00*; H01p *3/08*
U.S. Cl. 333—73 S **5 Claims**

The disclosure shows a planar equivalent of a helical resonator made in the form of a micro-strip line coiled into a helix on one side of a dielectric board having on the other side

a ground plane conductor. The inductance of the helix and the distribution capacitance between the helix and the ground

plane are made to resonate at a frequency in a narrow band in the radiofrequency spectrum encompassing a few hundred to several hundred megahertz.

3,769,617

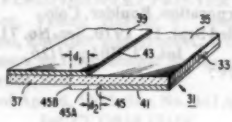
TRANSMISSION LINE USING A PAIR OF STAGGERED BROAD METAL STRIPS

Laurice Juston West, Levittown, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 9, 1971, Ser. No. 206,420

Int. Cl. H01p *3/02, 3/08*

U.S. Cl. 333—84 R **8 Claims**



A transmission line is formed by a pair of parallel, staggered, broad metal strips. In one embodiment, the broad metal strips are on opposite surfaces of a dielectric substrate with at most a relatively small overlap of the broad metal strips.

3,769,618

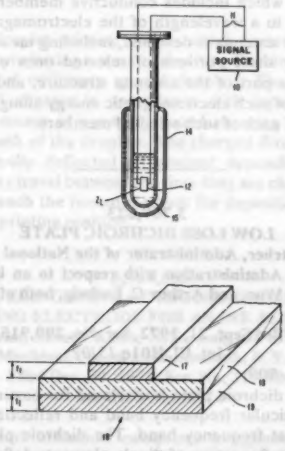
THIN FILM LOW TEMPERATURE CONDUCTORS AND TRANSMISSION LINES

James F. Freedman, Pleasantville, N.Y.; George R. Henry, Palo Alto, Calif.; Ashok F. Mayadas, Somers, and Morris Shatzkes, Monsey, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,238

Int. Cl. H01p *3/06, 3/08, 3/12*

U.S. Cl. 333—84 M **10 Claims**



A conductor or transmission line composed of at least one thin conductive member for operation in the anomalous skin effect region, i.e., low temperature and high frequency in which the thickness of conductors is selected for minimum impedance and resistance to current within the thickness range wherein the resistance and impedance are below the thick film resistance and impedance in the anomalous skin effect region. Thickness optimization yields these results independently of dielectric materials or actual placement of conductors with respect to each other in a transmission system.

3,769,619

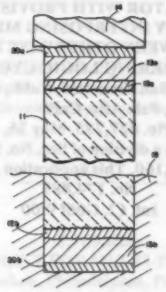
STRIPLINE ASSEMBLY FOR USE IN MICROWAVE CIRCUITS AND METHOD OF FABRICATING SAME

Choh-Yi Ang, and George J. Mills, both of Santa Ana, Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed Apr. 20, 1972, Ser. No. 245,876

Int. Cl. H01p *3/08;* **B23k** *31/02*

U.S. Cl. 333—84 M **5 Claims**



A stripline assembly suitable for use as a delay line in a microwave amplifier tube or the like is formed by bonding a dielectric isolator at one face thereof to a conductive stripline of a highly conductive metal such as copper, and at the opposite face to a highly conductive support base which also may be of copper. The dielectric material which may be of a high thermal conductivity ceramic is bonded to the aforementioned metallic components by depositing a thin metallic layer of material such as molybdenum onto each of the ceramic faces to achieve a good metal-ceramic bond. A second metallic layer which may be of copper is then deposited onto the molybdenum to provide a medium which can be brazed to the copper stripline and the support base, as the case may be.

3,769,620

PLURAL BAND TUNER HAVING MEANS TO ROTATE RESISTOR SUPPORT PLATE FOR FINE TUNING

Sachio Kimura, and Yoshiaki Aoki, both of Tokyo-to, Japan, assignors to Kabushiki Kaisha Koparu, Tokyo-to, Japan

Filed Sept. 12, 1972, Ser. No. 288,333

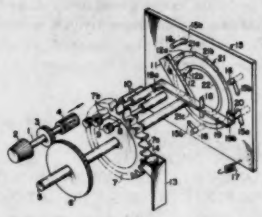
Claims priority, application Japan, Sept. 17, 1971, 46/72274

Int. Cl. H03j *5/12, 3/10*

U.S. Cl. 334—11 **3 Claims**

A broadcast channel selecting apparatus used for all channel electronic tuners is disclosed. It includes an annular resistor arrangement consisting of three resistor sections respectively responsible for VHF-L region, VHF-H region and UHF region of the broadcast band and a brush in sliding contact with said resistor arrangement. By rotating a station selecting knob, rotation is transmitted through a detent mechanism to the brush to move the brush step-wise. On the other hand, by

rotating the knob while holding it in its depressed or advanced state, the resistor arrangement can be continuously rotated



with respect to the brush, whereby a correct tuning voltage for each selected channel may be applied to a tuner circuit.

3,769,621

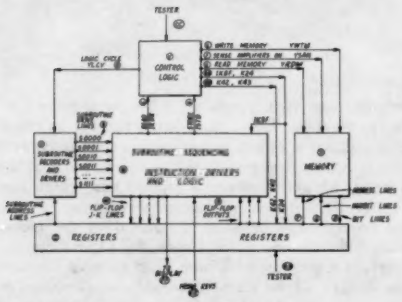
CALCULATOR WITH PROVISION FOR AUTOMATICALLY INTERPOSING MEMORY ACCESS CYCLES BETWEEN OTHERWISE REGULARLY RECURRING LOGIC CYCLES

Thomas E. Osborne, San Francisco, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 827,795, May 26, 1969, Pat. No. 3,623,156, which is a division of Ser. No. 559,887, June 23, 1966, Pat. No. 3,566,160. This application Aug. 25, 1971, Ser. No. 174,889

Int. Cl. G06f 9/00

U.S. Cl. 340—172.5 **13 Claims**



Internal control and subroutine logic transfers data between a keyboard input, a random access memory, and a plurality of flip-flop registers to perform arithmetic operations and transfers the results of these operations to a cathode ray tube output display. The flip-flop registers include a program register comprising a set of primary flip-flops for designating a subroutine to be performed and a set of secondary flip-flops for sequentially designating a group of one or more instructions to be executed in each state of the designated subroutine. The primary and secondary flip-flops are controlled by multiple feedback paths. Power switching is employed in the internal control and subroutine logic so that the subroutines and instructions are supplied with power only when they are to be executed. The flip-flop registers also include a memory access register for receiving information read from and to be written into the random access memory. When a random access memory cycle is required, it is automatically interposed between the otherwise regularly recurring logic cycles by the internal control and subroutine logic. Separate logic circuits are provided for enabling the state of the secondary flip-flops to be directly transferred to the memory access register and vice versa so that encoded transfer vectors may be stored in the random access memory and subsequently decoded by the internal control and subroutine logic to permit unrestricted subroutine returns. In the keyboard input, two power supply returns are employed to define one bit of the keyboard encoder. The random access memory is partitioned into one portion addressed by a single bit in an address register and into another, larger portion addressed by the remaining bits in the address register. Each flip-flop of the machine is a J–K flip-flop provided with an adjustable threshold for noise immunity and with a high internal gain on the J–K inputs. In the cathode ray tube output display a recurring pattern generated by integration in only two directions is selectively blanked to display the results of the operations performed by the calculator. A tester may be connected to the machine for allowing all subroutines to be operated in a single step mode. The tester is provided with switches for initializing any internal state of the machine or stopping normal execution under any prescribed conditions and with apparatus for accessing the random access memory.

3,769,622

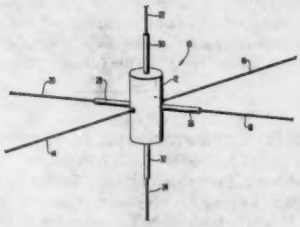
ANTENNA WITH ELECTRICALLY LONG SUPPORT

Robert E. Munson, Boulder, Colo., assignor to Ball Brothers Research Corporation, Boulder, Colo.

Filed Sept. 11, 1970, Ser. No. 71,552

Int. Cl. H01q 21/26

U.S. Cl. 343—797 **11 Claims**



An antenna for providing an omnidirectional pattern in an evvironment which includes conductive members which are long relative to a wavelength of the electromagnetic energy for which the antenna is designed, including means for utilizing relatively short portions of selected ones of such long members as a part of the antenna structure, and preventing propagation of such electromagnetic energy along the remaining portion of each of such selected members.

3,769,623

LOW LOSS DICHROIC PLATE

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Richard T. Woo, and Arthur C. Ludwig, both of La Canada, Calif.

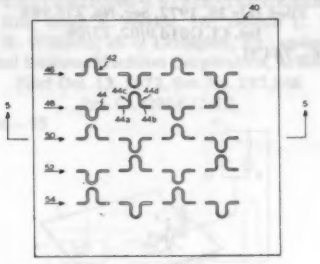
Filed Sept. 21, 1972, Ser. No. 290,915

Int. Cl. H01q 15/02

U.S. Cl. 343—909 **9 Claims**

A low loss dichroic plate is disclosed for passing radiation within a particular frequency band and reflecting radiation outside of that frequency band. The dichroic plate is comprised of a configuration of dipole elements defined by slots formed in a conductive plate. The slots are dimensioned so as

to pass radiation of a selected frequency and are shaped so as to minimize the relationship between that frequency and the



tilt angle of the plate relative to the direction of radiation. The slots are arranged so as to minimize signal power loss due to cross polarization effects.

3,769,624

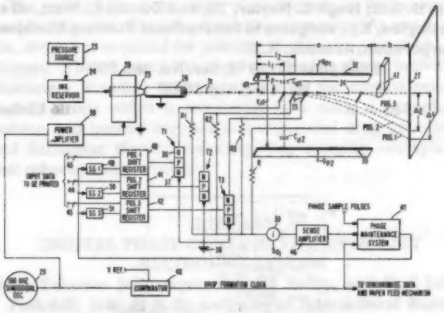
FLUID DROPLET PRINTER

Chen-Hsiung Lee, Vestal; Harold R. Lominac, Endicott; Charles O. Ross, Endicott, and Bruce A. Wolfe, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 6, 1972, Ser. No. 241,601

Int. Cl. G01d *15/18*

U.S. Cl. 346—1 **30 Claims**



A fluid droplet printing system which writes on a record medium by projecting a stream of writing fluid in the form of a succession of uniformly spaced droplets. The droplets are given equal charges in accordance with input data to be printed by means of a row of spaced charging pins disposed along the path of the droplets. The charged droplets are then electrostatically deflected an amount depending upon the distance they travel between the time they are charged and the time they reach the record medium for deposition thereon in the desired printing position.

3,769,625

TRAVELING WAVE ACTUATED SEGMENTED CHARGING ELECTRODE FOR AN INK JET PRINTER

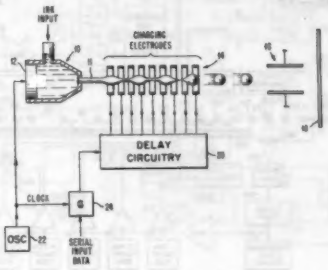
John B. Gunn, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,404

Int. Cl. G01d *15/18*

U.S. Cl. 346—1 **11 Claims**

The present invention comprises a segmented charging electrode for use in an ink jet printing system wherein the segments are connected to the taps of a delay line or circuit of similar function which in effect produces a traveling wave along the charging electrode. The rate of propagation of the delay line is such that it substantially equals the velocity of the ink jet stream. Use of the disclosed circuitry obviates the



synchronization circuitry usually necessary to maintain the proper phase relationship between the droplet forming transducer and the ink droplet charging pulse applied to the charging electrode.

3,769,626

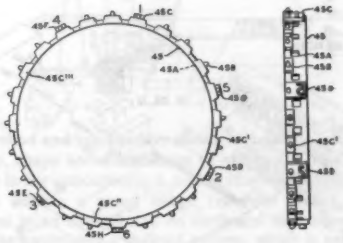
PRINTING ELEMENT FOR MULTI-POINT RECORDERS

Robert W. McClenahan, Philadelphia, Pa., assignor to Leeds & Northrup Company, Philadelphia, Pa.

Filed Dec. 27, 1971, Ser. No. 212,247

Int. Cl. G01d *15/20, 9/34*

U.S. Cl. 346—61 **5 Claims**



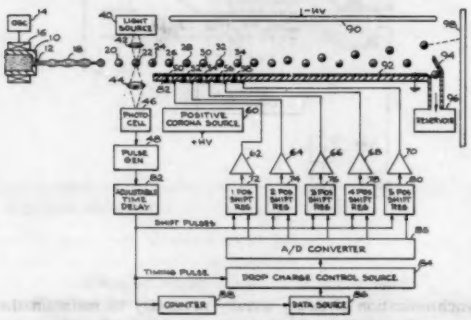
A printing mechanism for a multi-point recorder capable of recording as a function of time the magnitude of a number of different measured quantities, such as temperature, pressure, voltage, or the like. The printing mechanism is of the kind comprised of a print carriage having a type wheel or type belt cyclically engaging a chart. In a preferred modification a single type belt is employed which is driven by a drive wheel and has a loop carried on a guide wheel mounted on a print arm. The type belt, or a type wheel, is characterized by a novel arrangement of mark producing means and function identifying characters which prints marks on a recorder chart indicating the values of measured quantities some of which marks are accompanied by function identifying characters so that the records of the different measured quantities are readily distinguished one from another.

3,769,627

INK JET PRINTING SYSTEM USING ION CHARGING OF DROPLETS

Joseph J. Stone, Northbrook, Ill., assignor to A.B. Dick Company, Chicago, Ill.

Filed Dec. 13, 1972, Ser. No. 314,512
Int. Cl. G01d 15/18
U.S. Cl. 346—75 13 Claims



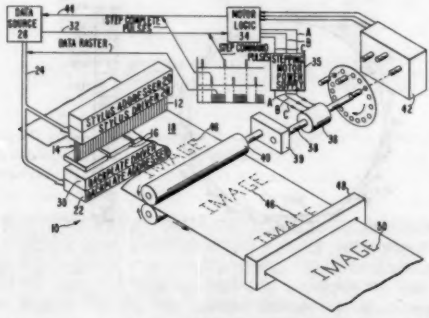
There is described an arrangement for charging with ions the drops in an ink drop printing apparatus, in place of the present induction charging techniques which are employed.

3,769,628

METHOD AND APPARATUS FOR ELECTROSTATICALLY RECORDING WITH A CLOSED LOOP WEB DRIVE

Philip Charles Kenny, Los Altos, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Apr. 3, 1972, Ser. No. 240,779
Int. Cl. G01d 15/02, 9/26
U.S. Cl. 346—74 ES 6 Claims



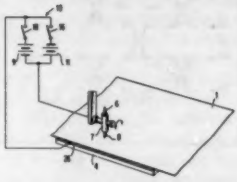
A charge image is electrostatically recorded on a web through an array of writing electrodes. A stepping motor moves the web in response to a digital data source which also selects and activates the writing electrodes. The motor stepping and web motion is synchronized with the digital data input to the writing electrodes. The stepping motor is provided with a shaft encoder for detecting each step as it is completed and for feeding back this web change-in-position information to the digital data source. Upon receiving the step completion pulse, the digital data source releases the next raster of digital bits to the writing electrode array. Feedback between the shaft encoder and the digital data source preserves writing integrity on the web during start-up acceleration and subsequent deceleration of the web.

3,769,629

MULTICOLOR PERMANENT AND ERASABLE PRINTING

Carlos J. Sambucetti, Mohegan Lake, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 28, 1972, Ser. No. 275,989
Int. Cl. G01d 9/02, 15/06
U.S. Cl. 346—74 CH 7 Claims



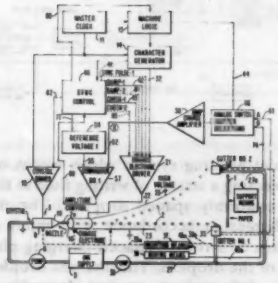
An electro-chemical printing system operable in either a permanent printing or erasable printing mode. A single electrode may function as both the permanent marking electrode and the erasable marking electrode simply by reversing the polarity of the potential applied to the electrode. Provision is also made for erasing erasable markings. A salt bridge may be provided between a reference electrode and the recording medium to prevent a counter-mark during erasing.

3,769,630

INK JET SYNCHRONIZATION AND FAILURE DETECTION SYSTEM

James D. Hill; Hugh E. Naylor, III, and Donald L. West, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 27, 1972, Ser. No. 266,790
Int. Cl. G01d 18/00
U.S. Cl. 346—75 6 Claims



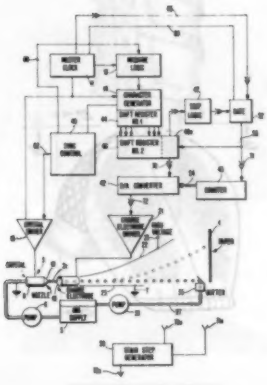
Individual ink droplets are formed at a nozzle, propelled toward a record medium, variably charged by a charge electrode, and deflected by deflection plates for printing of characters. Droplets not required for printing are directed to a first gutter. The charges on the droplets develop a current in the first gutter that is sensed in an electronic feedback loop for synchronization of drop formation with drop charging. An auxiliary gutter is positioned to receive drops during a checking interval when a relatively high charge is applied to the unused drops. The relatively high charge on the drops develops a much larger current in the auxiliary gutter that is easier to detect. If desired, synchronization can also be effected by using the auxiliary gutter.

3,769,631

INCREASING THROUGHPUT IN INK JET PRINTING BY DROP SKIPPING AND REDUCING INK JET MERGING AND SPLATTER USING A STAIRSTEP GENERATOR

James D. Hill; Hugh E. Naylor, III; Donald L. West, and Thomas H. Williams, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 13, 1972, Ser. No. 297,546
Int. Cl. G01d *15/18*
U.S. Cl. 346—75 10 Claims



The present case concerns various techniques for increasing the printing rate of an ink jet printing apparatus. As one example, drops not required for printing, that is, drop intervals, are skipped. This reduces the time required to form individual characters. Another technique modifies the normal generation of drops which is sequential in a column by column fashion and instead imposes non-sequential drop generation and deflection thereby reducing drop merging and splatter that otherwise might occur.

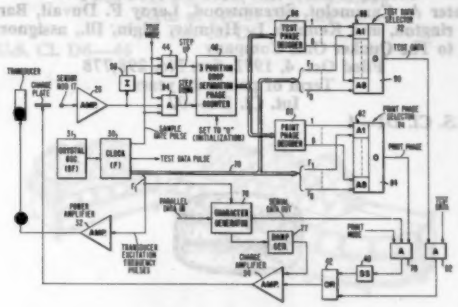
3,769,632

DIGITAL PHASE CONTROL FOR AN INK JET RECORDING SYSTEM

Hans Yohanan Julisburger, Putnam Valley, and Paul Lowy, Peekskill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 11, 1972, Ser. No. 313,914
Int. Cl. G01d *15/18*
U.S. Cl. 346—75 11 Claims

The present invention comprises a digital logic system for controlling the synchronization of drop production and charging signals in an ink jet recording system utilizing electrostatic deflection of individual ink jet droplets. The control circuitry is particularly well adapted to utilize an inductive charge sensing element to provide the input information into the phase control logic section. Synchronization measurements are made during a special test cycle phase which is separate from the print cycle and which occurs periodically during the



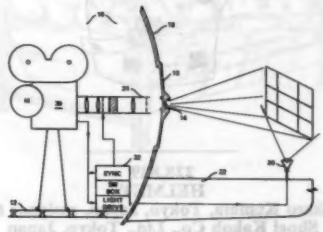
operation of the system. Adjustments of the phase of the charging circuitry are made in accordance with the sensing and phase information of the last adjustment which is stored to be used as the starting position in the subsequent test cycle.

3,769,633

RAINDROP IMAGE RECORDING ANALYZER SYSTEM

Wallis L. Teeter, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 11, 1972, Ser. No. 252,400
Int. Cl. G01d
U.S. Cl. 346—107 R 1 Claim



A method and apparatus is disclosed for measuring the density size, shape and distribution of rain, snow, hail, sleet and the like in the atmosphere. A preferred embodiment of the apparatus utilizes a gated image (channel plate) intensifier mounted in an aircraft and an outboard high intensity light. The light establishes a defined volume which is examined by the image intensifier for a time interval on the order of a microsecond or less. The image is retained by the intensifier tube while a high speed camera or other means photographs or scans the surface to provide a record.

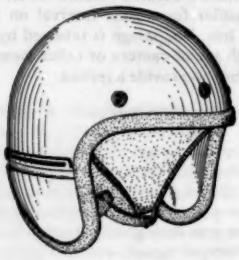
DESIGNS

OCTOBER 30, 1973

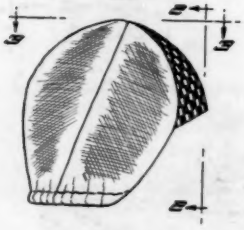
228,827
EXPANDED CEREAL FOOD PRODUCT
Peter A. Cammelot, Streamwood, Leroy F. Duvall, Barrington, and Kenneth L. Helmke, Elgin, Ill., assignors to The Quaker Oats Company
Filed Oct. 4, 1972, Ser. No. 298,778
Term of patent 14 years
Int. Cl. D1—*02*
U.S. Cl. D1—1

228,828
SAFETY RESTRAINT VEST
Richard S. Chapman, 1403 Arthur Drive, Provo, Utah 84601
Filed June 15, 1971, Ser. No. 153,481
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—190

228,829
HELMET
Eitaro Kamata, Tokyo, Japan, assignor to Shoei Kakoh Co., Ltd., Tokyo, Japan
Filed June 16, 1971, Ser. No. 153,926
Claims priority, application Japan Dec. 17, 1970
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232



228,830
CAP
Benjamin H. Rutman, Minneapolis, Minn., assignor to Malrov-United Hat & Cap Co., Inc., Minneapolis, Minn.
Filed Mar. 8, 1972, Ser. No. 233,002
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—249



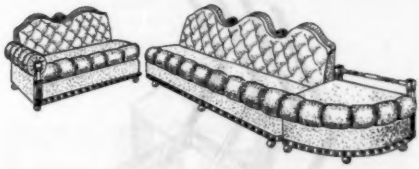
228,831
NURSE'S CAP
Clifford Wayne Shumate, Carlisle, Ky., assignor to Johnson & Johnson
Filed Aug. 18, 1971, Ser. No. 172,960
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—255

228,832
BOOT
Edward G. Robinson, 6710 Whitney Ave., Cleveland, Ohio 44103
Filed Oct. 29, 1971, Ser. No. 194,098
Term of patent 3½ years
Int. Cl. D2—*04*
U.S. Cl. D2—275

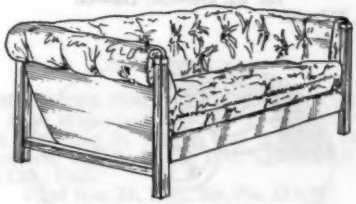
228,833
QUILTING THIMBLE
Agnes M. Meyer, 2902 Hickory, Higginsville, Mo. 64037
Filed Nov. 8, 1971, Ser. No. 196,864
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—19 E

228,834
SHOULDER STRAP SUPPORT
Homer D. Counter, P.O. Box 96, Stirling City, Calif. 95978
Filed May 25, 1972, Ser. No. 257,067
Term of patent 14 years
Int. Cl. D2—*99*
U.S. Cl. D2—452

228,835
SECTIONAL SOFA
Hubert Howard Watson and Mike Stewart Watson, Galax, Va., assignors to Sawyers Furniture Company, Galax, Va.
Filed Feb. 28, 1972, Ser. No. 230,206
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—46



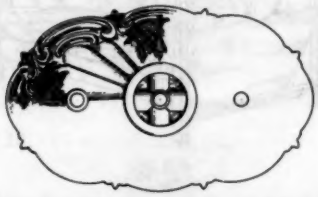
228,836
SOFA
Thomas Winrow, Naperville, Ill., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed Apr. 22, 1971, Ser. No. 136,650
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—63



228,837
RECLINING CHAIR
Ronald W. Hari, El Cerrito, Calif. (940 E. Napa St., Sonoma, Calif. 95476)
Filed July 28, 1971, Ser. No. 167,076
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—75

228,838
RACK FOR WEARING APPAREL
Sigmar E. Sobczak, 1428 W. Jonquil Terrace, Chicago, Ill. 60626
Filed June 9, 1971, Ser. No. 151,619
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—85

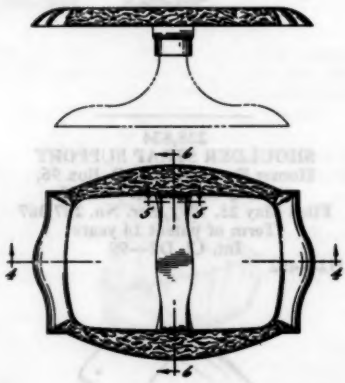
228,839
BASE FOR BATHROOM FIXTURE OR THE LIKE
Willard H. Sahloff, Bridgeport, Conn., assignor to Handy-Andy Specialty Co., Inc., New York, N.Y.
Filed Jan. 27, 1972, Ser. No. 221,495
Term of patent 14 years
Int. Cl. D6—*06*; D8—*08*
U.S. Cl. D6—86



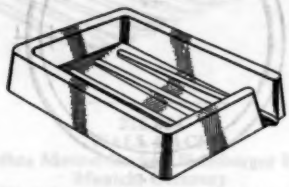
228,840
BASE FOR BATHROOM FIXTURE AND THE LIKE
Willard H. Sahloff, Bridgeport, Conn., assignor to Handy-Andy Specialty Co., Inc., New York, N.Y.
Filed Oct. 29, 1971, Ser. No. 194,082
Term of patent 14 years
Int. Cl. D6—*06*; D8—*08*
U.S. Cl. D6—86

228,841
BASE FOR BATHROOM FIXTURE AND THE LIKE
Willard H. Sahloff, Bridgeport, Conn., assignor to Handy-Andy Specialty Co., Inc., New York, N.Y.
Filed Aug. 27, 1971, Ser. No. 175,810
Term of patent 14 years
Int. Cl. D6—*06*; D8—*08*
U.S. Cl. D6—86

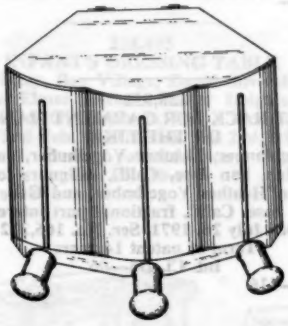
228,842
SOAP DISH HOLDER
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Jan. 10, 1972, Ser. No. 216,892
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—89



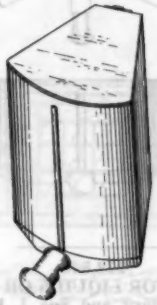
228,843
SOAP RECEPTACLE
Joseph J. Settle, 1319 N. Fashion Lane 1, Anaheim, Calif. 92806
Original design application Nov. 27, 1970, Ser. No. 26,182, now Patent No. 224,028, dated June 27, 1972. Divided and this application Feb. 7, 1972, Ser. No. 232,650
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—89



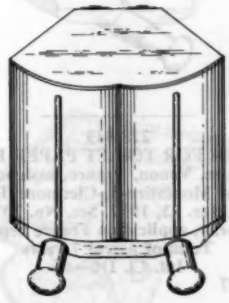
228,844
LIQUID DISPENSER
Wayne Paul Hilgendorff and Sue J. Hilgendorff, 7061 South 1700 East St. 84121, and Norman Alexander Hilgendorff, 450 E. Robert Ave. 84115, all of Salt Lake City, Utah
Filed Dec. 29, 1971, Ser. No. 213,787
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—95



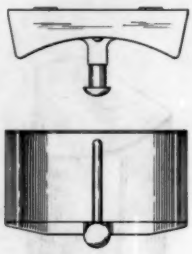
228,845
DISPENSER FOR LIQUID OR THE LIKE
Wayne Paul Hilgendorff and Sue J. Hilgendorff, 7061 South 1700 East St. 84121, and Norman Alexander Hilgendorff, 450 E. Robert Ave. 84115, all of Salt Lake City, Utah
Filed Dec. 29, 1971, Ser. No. 213,780
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—95



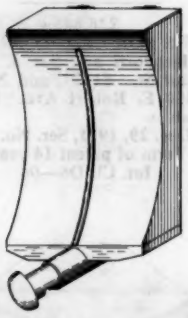
228,846
DISPENSER FOR LIQUID OR THE LIKE
Wayne Paul Hilgendorff and Sue J. Hilgendorff, 7061 South 1700 East St. 84121, and Norman Alexander Hilgendorff, 450 E. Robert Ave. 84115, all of Salt Lake City, Utah
Filed Dec. 29, 1971, Ser. No. 213,781
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—95



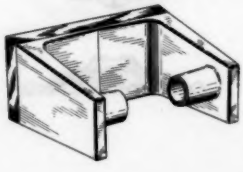
228,847
LIQUID SOAP DISPENSER
Wayne Paul Hilgendorff and Sue J. Hilgendorff, 7061 South 1700 East St. 84121, and Norman Alexander Hilgendorff, 450 E. Robert Ave. 84115, all of Salt Lake City, Utah
Filed June 1, 1971, Ser. No. 149,122
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—95



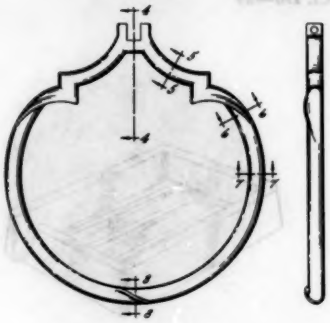
228,848
DISPENSER FOR LIQUIDS OR THE LIKE
Wayne Paul Hilgendorff and Sue J. Hilgendorff, 7061 South 1700 East St. 84121, and Norman Alexander Hilgendorff, 450 E. Robert Ave. 84115, all of Salt Lake City, Utah
Filed Dec. 29, 1971, Ser. No. 213,779
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—95



228,849
HOLDER FOR TOILET PAPER ROLLS
Jacques Firdmann, Venon, France, assignor to Etablissements Allibert Monestier-de-Clermont, Isere, France
Filed Mar. 23, 1972, Ser. No. 237,610
Claims priority, application France Sept. 24, 1971
Term of patent 7 years
Int. Cl. D6—*06*
U.S. Cl. D6—97

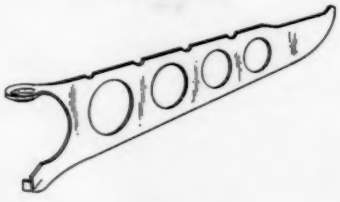


228,850
TOWEL RING
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Jan. 10, 1972, Ser. No. 216,908
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—99

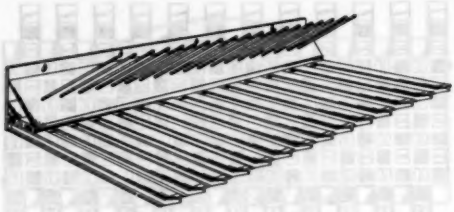


228,851
TOWEL BAR
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Jan. 10, 1972, Ser. No. 216,909
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—99

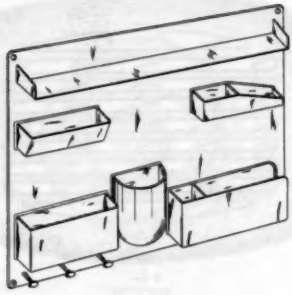
228,852
SUPPORT RACK FOR GARMENT HANGERS OR THE LIKE
Fred W. Vogelhuber, Heather Vogelhuber, and Gilman C. McMillan, San Jose, Calif., assignors to Fred W. Vogelhuber, Heather Vogelhuber, and Gene D. Moss, all of San Jose, Calif., fractional part interest to each
Filed July 26, 1971, Ser. No. 166,332
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—116



228,853
DISPLAY RACK FOR NUTS AND BOLTS OR THE LIKE
George G. Charlton, Rte. 3, Box 67, Ellensburg, Wash. 98926
Filed Aug. 16, 1971, Ser. No. 172,363
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—125

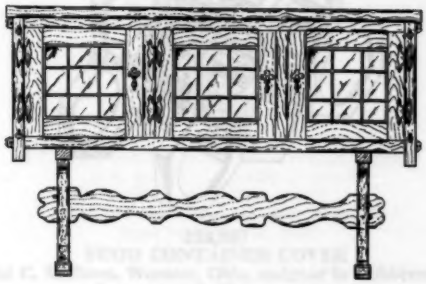


228,854
WALL RACK
Dorothee Maurer-Becker, Habsburger Platz 2, Munich, Germany
Filed Dec. 8, 1971, Ser. No. 206,234
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—131



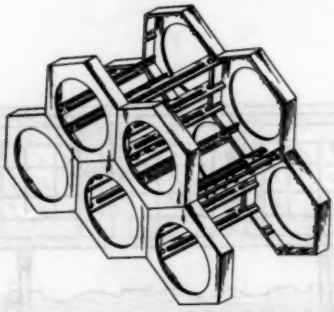
228,855
INFANT'S DRESSING TABLE
Lawrence Blazey, Bay Village, David Silverstrom, Lyndhurst, and Elmer Rocker, Shaker Heights, Ohio, assignors to Century Products, Inc., Cleveland, Ohio
Filed Feb. 7, 1972, Ser. No. 224,399
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—168

228,856
CABINET
Arthur Allsop, 9 Smith Ave., Codnor, England
Filed Dec. 30, 1971, Ser. No. 214,513
Claims priority, application Great Britain July 28, 1971
Term of patent 7 years
Int. Cl. D6—*04*
U.S. Cl. D6—168

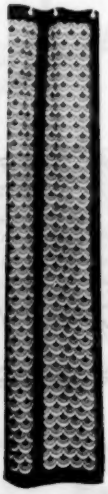


228,857
TABLE OR SIMILAR ARTICLE
Arthur Allsop, 9 Smith Ave., Codnor, England
Filed Nov. 10, 1971, Ser. No. 197,569
Claims priority, application Great Britain May 13, 1971
Term of patent 7 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

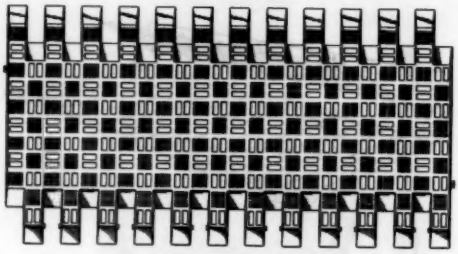
228,858
WINE RACK
Edward A. Wagschal, New York, N.Y., assignor to Recycled Plastic Products Corp., Bronx, N.Y.
Filed Nov. 9, 1971, Ser. No. 197,193
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D6—188



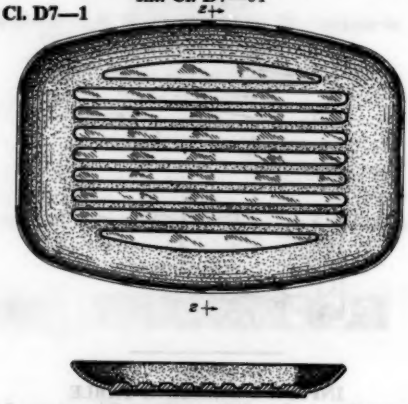
228,859
CURTAIN
Daniel Hughes, Scranton, Pa., assignor to The Scranton Corporation, Scranton, Pa.
Filed Jan. 5, 1972, Ser. No. 215,711
Term of patent 14 years
Int. Cl. D6—*10*
U.S. Cl. D6—205



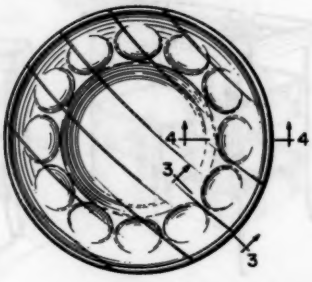
228,860
ORNAMENTAL FATIGUE RELIEF FLOOR MAT
Michael A. Roby, Winchester, Va., assignor to Rubbermaid Commercial Products, Inc., Winchester, Va.
Filed Jan. 5, 1972, Ser. No. 215,710
Term of patent 7 years
Int. Cl. D6—*11*
U.S. Cl. D6—209



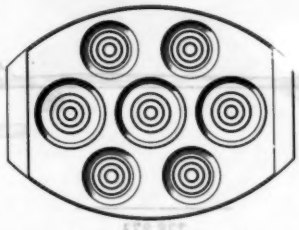
228,861
PLATTER
Edwin G. Melich, Chicago, Ill., assignor to Tomlinson Industries, Inc.
Filed Dec. 9, 1971, Ser. No. 206,588
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—1



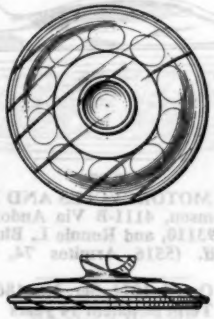
228,862
TRAY
Glenn B. Beckman, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Mar. 1, 1972, Ser. No. 231,065
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—36



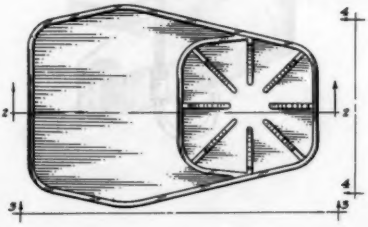
228,863
TRAY
Joseph L. Sholkin, Newton, Mass., assignor to Beacon Products Corp., Newton Highlands, Mass.
Filed Apr. 11, 1972, Ser. No. 243,110
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—38



228,864
CASSEROLE COVER
Glenn B. Beckman, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Mar. 1, 1972, Ser. No. 231,058
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—40

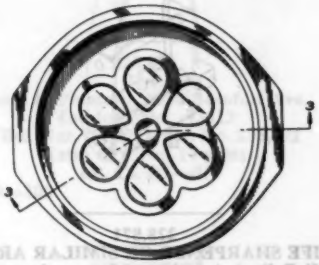


228,865
COMBINED COASTER AND SNACK TRAY
James E. Johnson, Pompano Beach, Fla. (2863 NE. 35th Court, Lighthouse Point, Fla. 33064)
Filed May 28, 1971, Ser. No. 148,269
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—38



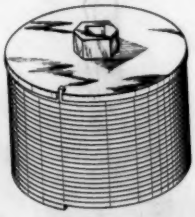
228,866
CARVING GUIDE
Gary Fiene, 762 Camino Ricardo, Moraga, Calif. 94556
Filed Sept. 13, 1971, Ser. No. 180,239
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—105

228,867
FOOD CONTAINER COVER
Paul C. Mallonn, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Feb. 24, 1972, Ser. No. 229,255
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—131

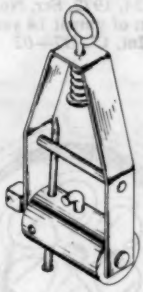


228,868
REMOVAL TOOL
Brian Anthony Bush, Berwyn, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.
Filed Feb. 7, 1972, Ser. No. 224,393
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—4

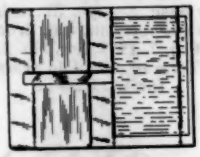
228,869
OIL FILTER REMOVAL RATCHET WRENCH
Clifford D. Barnes, 2180 S. Allison Court, Lakewood, Colo. 80227, and Norman S. Burnette, 3825 N. County Road 25E, Bellvue, Colo. 80512
Filed Nov. 17, 1971, Ser. No. 199,821
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—25



228,870
WIRE TIGHTENER OR SIMILAR ARTICLE
Louis C. Allen, 911 E. 2nd Ave., Ellensburg, Wash. 98926
Filed Oct. 8, 1971, Ser. No. 187,927
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—44



228,871
KNIFE SHARPENER OR SIMILAR ARTICLE
Ross F. Pollard, Amesbury, Mass., assignor to Towle Manufacturing Company, Newburyport, Mass.
Filed July 10, 1972, Ser. No. 270,012
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—93



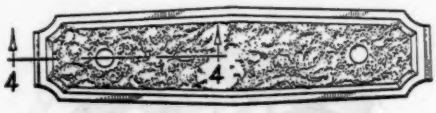
228,872
FILE HOLDER
Regent E. Cloutier, 2251 Sandpiper Drive, Fairfield, Calif. 94533
Filed Jan. 31, 1972, Ser. No. 222,461
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—94

228,873
FILE HOLDER FOR AUTO BODY WORK
Regent E. Cloutier, 2251 Sandpiper Drive, Fairfield, Conn. 94533
Filed Jan. 31, 1972, Ser. No. 222,455
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—94

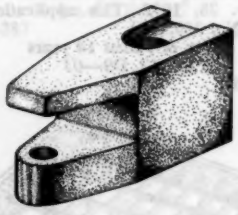
228,874
LOCK FOR MOTORCYCLES AND BICYCLES
William R. Thomson, 4111-B Via Andorra, Santa Barbara, Calif. 93110, and Ronnie L. Blumenthal, Santa Barbara, Calif. (5516 Armitos 74, Goleta, Calif. 93017)
Filed Oct. 4, 1971, Ser. No. 186,599
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—113

228,875
ANTITHEFT STEERING WHEEL LOCKING APPARATUS
Lawrence I. Holtzworth, 28739 Kenroy Ave., Saugus, Calif. 91350, and Zoltan J. Varga, 5450 Russell Ave., Hollywood, Calif. 90027
Filed July 6, 1971, Ser. No. 160,240
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—113

228,876
ESCUTCHEON PLATE FOR A PULL
La Verne E. Clayton, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Original design application Aug. 12, 1970, Ser. No. 24,455, now Patent No. 222,233, dated Oct. 12, 1971. Divided and this application Mar. 25, 1971, Ser. No. 128,224
Term of patent 14 years
Int. Cl. D8—*06, 09*
U.S. Cl. D8—179



228,877
HANGER CLAMP
Andrew J. Hirt, Youngstown, Ohio, assignor to Hanger Supply Company, Youngstown, Ohio
Filed June 27, 1972, Ser. No. 266,534
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—235

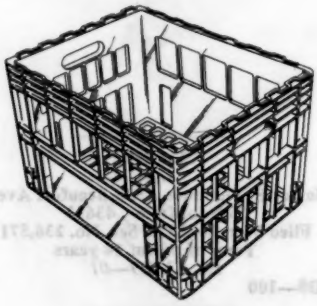


228,878
HANGER ASSEMBLY FOR INTRAVENEOUS BOTTLES OR OTHER DEVICES
James E. Richardson, 4912 Central Ave., Indianapolis, Ind. 46205
Filed June 14, 1971, Ser. No. 153,142
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—246

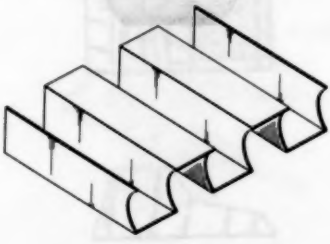
228,879
JAR
James E. Plummer, 2530 Beaufort Ave., Toledo, Ohio 43613
Filed Mar. 20, 1972, Ser. No. 236,571
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—100

228,880
BOTTLE
Gordon A. Strand, Toledo, Ohio, and Richard L. Drow, Milwaukee, Wis.; said Strand assignor to Owens-Illinois, Inc., Toledo, Ohio, and said Drow assignor to Graf's Beverages, Inc., Milwaukee, Wis.
Filed Apr. 10, 1972, Ser. No. 242,900
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—102

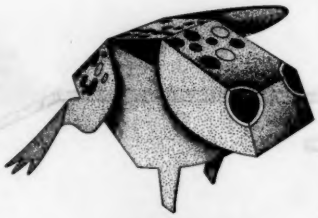
228,881
MILK CRATE
Alfred G. Stauble, P.O. Box 17, Hollis, N.H. 02109
Filed Dec. 15, 1971, Ser. No. 208,530
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—177



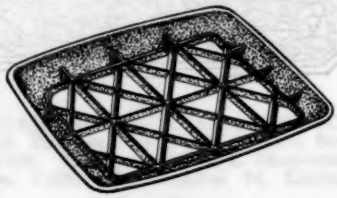
228,882
PROTECTOR FOR LOAVES OF BREAD
Robert M. Bish, 2112 Hackney, Houston, Tex. 77023, and Jewell W. Davis, Box 361–X, Rte. 2, Pearland, Tex. 77581
Filed June 7, 1971, Ser. No. 150,896
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—184



228,883
STORAGE CONTAINER
Elmer F. Sanzari, 194 Colonial Court, Teaneck, N.J. 07666
Filed Mar. 29, 1971, Ser. No. 129,300
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—199

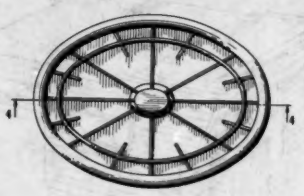


228,884
MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE
Richard Francis Reifers, New Canaan, Conn., and Kenneth Davison Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Continuation-in-part of design application Ser. No. 110,370, Jan. 27, 1971, now Patent No. 225,515, dated Dec. 19, 1972. This application May 3, 1972, Ser. No. 250,097
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



228,885
MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE
Richard Francis Reifers, New Canaan, Conn., and Kenneth Davison Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Continuation-in-part of design application Ser. No. 110,352, Jan. 27, 1971, now Patent No. 225,213, dated Nov. 28, 1972. This application May 3, 1972, Ser. No. 250,105
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219

228,886
CONTAINER CLOSURE
Cecil Renou, Johannesburg, Transvaal, Republic of South Africa, assignor to Renou Plastics (Proprietary) Limited, Isando, Transvaal, Republic of South Africa
Filed Nov. 12, 1971, Ser. No. 198,503
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—254



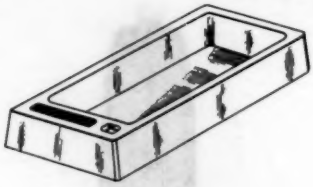
228,887
COMBINED CAN SEALING PLUG AND RETAINER RING THEREFOR
Richard L. Gedell, 7960 Jackson St. NE., Spring Lake Park, Minn. 55432
Filed Aug. 18, 1972, Ser. No. 281,793
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—255

228,888
TAMPER-PROOF CONTAINER CLOSURE
Jerome M. Feldman, Great Neck, N.Y., assignor to Hi-Tech Industries, Incorporated, Jamaica, N.Y.
Filed Sept. 14, 1972, Ser. No. 289,070
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—287

228,889
TIRE
Jacques Boileau, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie, Clermont-Ferrand (Puy-de-Dome), France
Filed Mar. 23, 1972, Ser. No. 237,597
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—142

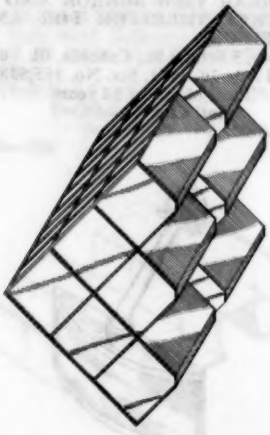
228,890
COMBINED REAR VIEW MIRROR AND MOUNTING BRACKET THEREFOR FOR AN AUTOMOTIVE VEHICLE
Lester Kolb, 9 School St., Cahokia, Ill. 62206
Filed July 20, 1971, Ser. No. 165,598
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—187

228,891
SWIMMING POOL
Richard G. Figueroa, Fremont, Calif., assignor to Concept Design America, Ltd., Fremont, Calif.
Filed July 19, 1971, Ser. No. 164,160
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1 G

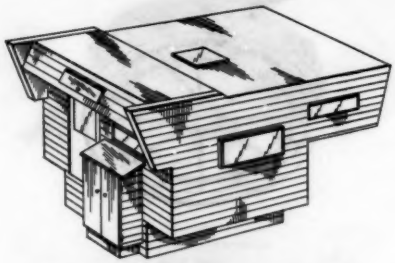


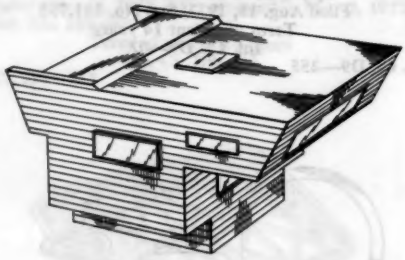
228,892
DIVING BOARD
Edward G. Farmer, Jr., and Lutherine R. Farmer, both of Krug Road, Underhill Center, Vt. 05490
Filed Feb. 15, 1972, Ser. No. 226,643
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1 G

228,893
BIN CONSTRUCTION
Rodney D. Jacobson, Ray, N. Dak., assignor to Jacobson and Sons Construction Co., Inc.
Filed Nov. 20, 1970, Ser. No. 26,241
Term of patent 14 years
The portion of the term of the patent subsequent to July 21, 1984, has been disclaimed
Int. Cl. D25—*03*
U.S. Cl. D13—1 R



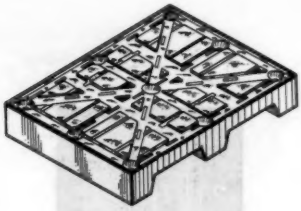
228,894
CHUCK WAGON CAMPER
Joshua D. Ezell, New York, N.Y. (Boiling Spring Lakes, N.C. 28461)
Filed Dec. 16, 1971, Ser. No. 211,173
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D14—3 F

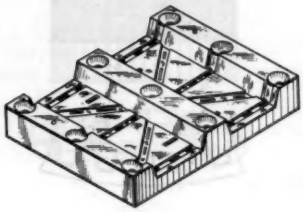




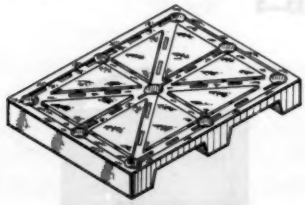
228,895
MOBILE BLOOD PRESSURE APPARATUS
Oscar R. Manning, 1818 Sunnyside Circle, Fayetteville, N.C. 28305
Filed Nov. 22, 1971, Ser. No. 201,261
Term of patent 14 years
Int. Cl. D12—*01*
U.S. Cl. D14—3 M

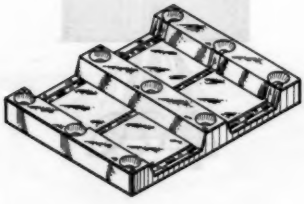
228,896
PALLET
Dennis M. Melnick and Mark Kubick, Baden, Pa., assignors to Pallet Development Inc., Ambridge, Pa.
Filed Sept. 29, 1971, Ser. No. 184,990
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D14—3 N



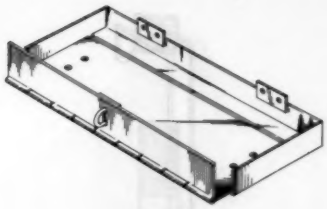


228,897
PALLET
Dennis M. Melnick and Mark Kubick, Baden, Pa., assignors to Pallet Development Inc., Ambridge, Pa.
Filed Sept. 29, 1971, Ser. No. 184,989
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D14—3 N

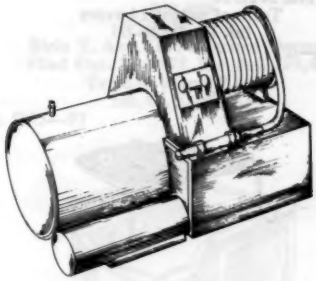




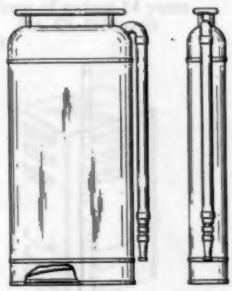
228,898
HOOD MOUNTED TOOL BOX FOR VEHICLES
Blaine R. Wickel, Sr., Rte. 1, Edgewood Lane, Boise, Idaho 83702
Filed Aug. 16, 1971, Ser. No. 172,362
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6 A



228,899
FIRE EXTINGUISHING DEVICE
John Price, Peabody, Mass., and Clifford B. Packard, South Glastonbury, Conn., assignors to Kaman Aerospace Corporation, Bloomfield, Conn.
Filed Apr. 8, 1971, Ser. No. 132,628
Term of patent 14 years
Int. Cl. D29—*01*; D23—*01*
U.S. Cl. D16—2 A



228,900
IN-WALL FIRE EXTINGUISHER
John M. Hogg, 537 Madison St., Albany, Calif. 94706
Filed June 7, 1971, Ser. No. 150,894
Term of patent 14 years
Int. Cl. D29—*01*
U.S. Cl. D16—2 A

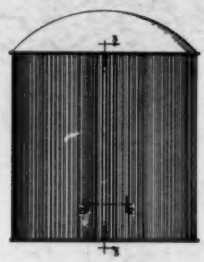


228,901
FISHING POLE HOLDER
James E. Gallaway, 608 W. Prasch Ave., Yakima, Wash. 98902
Filed Dec. 27, 1971, Ser. No. 211,956
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22

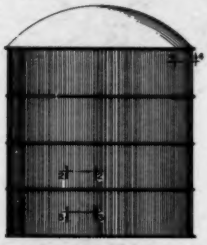
228,902
SINKING, WIGGLING, FISHING LURE
George S. Perrin, Fort Smith, Ark., assignor to Plastics Research and Development Corporation, Fort Smith, Ark.
Continuation-in-part of abandoned design application Ser. No. 124,664, Mar. 15, 1971. This application May 19, 1972, Ser. No. 255,310
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

228,903
FISHING LURE
David L. Goforth, 613 W. Kemp Road, Greensboro, N.C. 27401
Filed Dec. 28, 1970, Ser. No. 26,657
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

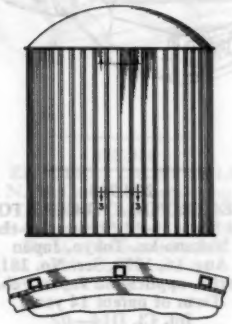
228,904
OUTER JACKET OF CRYOGENIC STORAGE VESSELS
Lloyd E. Anderson, Jr., Pittsburgh, Pa., and John O. Cliff, Ellington, Conn., assignors to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.
Filed Sept. 29, 1971, Ser. No. 184,983
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—2



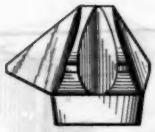
228,905
OUTER JACKET OF CRYOGENIC STORAGE VESSELS
Lloyd E. Anderson, Jr., Pittsburgh, Pa., and John O. Cliff, Ellington, Conn., assignors to Pitsburgh-Des Moines Steel Company, Pittsburgh, Pa.
Filed Sept. 29, 1971, Ser. No. 184,982
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—2



228,906
OUTER JACKET OF CRYOGENIC STORAGE VESSELS
John Terlesky, New Brighton, Pa., assignor to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.
Filed Sept. 16, 1971, Ser. No. 181,282
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—2

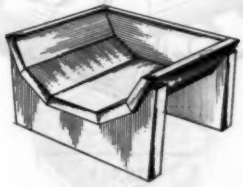


228,907
HANDLE FOR PLUMBING FITTINGS
Lloyd K. Jones and Martin W. Downey, Morgantown, W. Va., assignors to Rockwell Manufacturing Company, Pittsburgh, Pa.
Original design application Oct. 30, 1970, Ser. No. 25,742. Divided and this application Jan. 13, 1972, Ser. No. 217,713
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—29



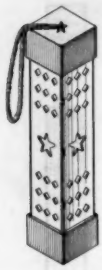
228,908
HANDSHOWER
Sven-Eric Juhlin, Gustavsberg, Sweden, assignor to AB Gustavsbergs Fabriker, Gustavsberg, Sweden
Filed Aug. 11, 1971, Ser. No. 171,045
Claims priority, application Sweden Feb. 16, 1971
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35

228,909
FIREPLACE
Stein Y. Aas, 2100 Ekarnes, Norway
Filed Dec. 17, 1971, Ser. No. 209,487
Term of patent 7 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



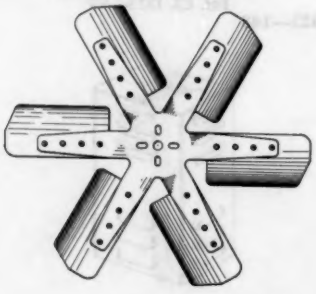
228,910
VAPOR DISPENSER OR SIMILAR ARTICLE
Lee S. Cline,, Downey, Calif., assignor to Cline-Buckner, Inc., Cerritos, Calif.
Filed Nov. 22, 1971, Ser. No. 201,266
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—148

228,911
INSECT REPELLANT CONTAINER OR SIMILAR ARTICLE
Adelaide L. Gatter, House Springs, Mo. (2801 Locust St., St. Louis, Mo. 63103)
Filed Jan. 31, 1972, Ser. No. 222,435
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150

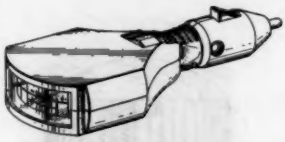


228,912
BLOWER
Edward E. Lewis, 895 Longview Road, Hillsborough, Calif. 94010
Filed July 26, 1972, Ser. No. 275,305
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—162

228,913
FAN
Theodore A. Fulton, Seattle, Wash., assignor to Flex-A-Lite Corporation, Tacoma, Wash.
Filed Aug. 3, 1972, Ser. No. 277,632
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—165



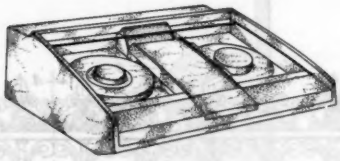
228,914
PLUG-IN AUTOMOTIVE BATTERY CHECK METER
Elbert K. Mackenzie, North Wales, Pa., assignor to Electro-Mechanical Instrument Co., Inc., Perkasie, Pa.
Filed Nov. 15, 1971, Ser. No. 199,081
Term of patent 7 years
Int. Cl. D10—*05*
U.S. Cl. D26—1 Q



228,915
ELECTRONIC CALCULATOR
Hideki Ishii, 31–18 Shirasagi 2-chome, Nakano-ku, Tokyo, Japan
Filed Aug. 16, 1972, Ser. No. 281,213
Claims priority, application Japan Feb. 24, 1972
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

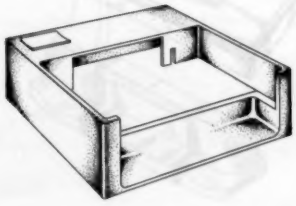
228,916
REVERSIBLE COUNTER DISPLAY CONTROL
Hoyt Bailey, 8213 Wildewood Drive, Ralston, Nebr.
Filed Aug. 9, 1971, Ser. No. 170,416
Term of patent 7 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 R

228,917
MAGNETIC TAPE TRANSPORT OR THE LIKE
Robert M. Hofland, Boulder, and Jack W. Stringer, Hygiene, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 8, 1971, Ser. No. 151,023
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—5 C



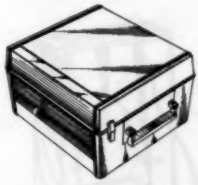
228,918
ELECTRIC LIGHT BULB
Jack N. McCarthy, Meadowood Road, Tolland, Conn. 06084
Filed Oct. 4, 1971, Ser. No. 186,575
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—8

228,919
SHROUD FOR CASETTE-TYPE TAPE DECK OR THE LIKE
Vincent L. Jacques, Longmont, Ted F. Kelley, Jr., Boulder, Ernest P. Kollar, Broomfield, and James M. Tagawa, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 30, 1971, Ser. No. 129,498
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B

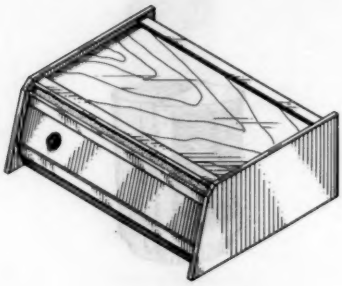


228,920
SPEAKER HOUSING
Yoshiaki Iida, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 17, 1972, Ser. No. 218,644
Claims priority, application Japan July 20, 1971
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G

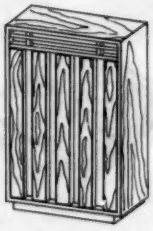
228,921
VIDEO TAPE RECORDER
Yoshio Yabuno, Toyonaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Nov. 4, 1971, Ser. No. 195,898
Claims priority, application Japan May 28, 1971
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



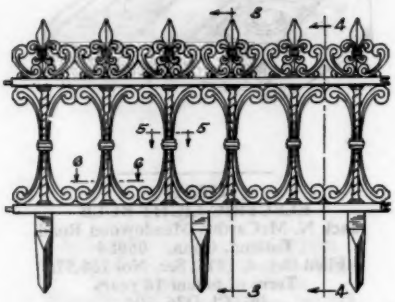
228,922
WIRELESS PUBLIC ADDRESS SYSTEM RECEIVER CABINET
Jerry R. Pruyne, Fort Collins, Colo., assignor to Sonotronics, Ltd., Fort Collins, Colo.
Filed Aug. 4, 1971, Ser. No. 169,164
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 L



228,923
LOUDSPEAKER ENCLOSURE
John Charles Rankin, 908 S. Hobart Blvd., Los Angeles, Calif. 90006
Filed July 10, 1972, Ser. No. 270,541
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14

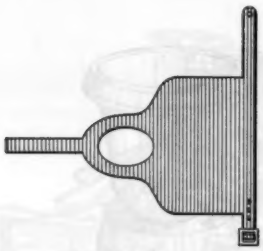


228,924
FENCE SECTION
Leo P. Niemiec, 5627 Emerson, Morton Grove, Ill. 60053
Filed Dec. 29, 1971, Ser. No. 213,789
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D28—1 A

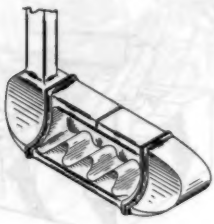


228,925
RELIGIOUS ORNAMENT
George M. Wallace, 64 Clinton St., Paterson, N.J. 07522
Filed June 19, 1972, Ser. No. 264,195
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A

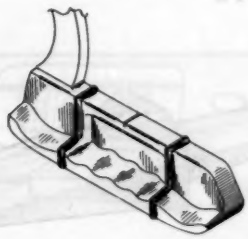
228,926
PROTECTIVE GARMENT FOR DOGS
Charles A. Bennett, 60 Lorimer St., Rochester, N.Y. 14608
Filed Feb. 16, 1972, Ser. No. 227,014
Term of patent 14 years
Int. Cl. D30—*01*
U.S. Cl. D30—37



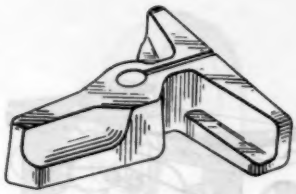
228,927
GOLF PUTTER HEAD
George C. Brower, 2308 Pacific Ave., Long Beach, Calif. 90806
Filed Feb. 7, 1972, Ser. No. 224,406
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



228,928
GOLF PUTTER HEAD
George C. Brower, 2308 Pacific Ave., Long Beach, Calif. 90806
Filed Feb. 7, 1972, Ser. No. 224,377
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



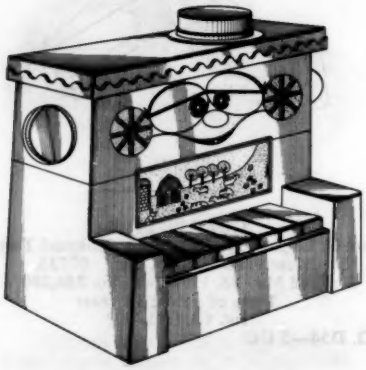
228,929
GOLF PUTTER HEAD
Edward H. Hoglund, 1020 Lois Ave., Park Ridge, Ill. 60068
Filed Mar. 23, 1972, Ser. No. 237,613
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



228,930
GOLF PUTTER
Robert G. Leigh, 6 Stoecher Lane, Holmdel Township, Monmouth County, N.J. 07733
Filed May 23, 1972, Ser. No. 256,200
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GC

228,931
TOY SEAL
Charles K. Grieder, 700 S. Lyon, Santa Ana, Calif. 92705
Filed Nov. 15, 1971, Ser. No. 199,092
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 B

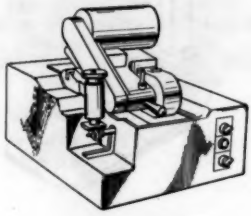
228,932
TOY PIANO
Jay Smith III, Pacific Palisades, and Anson Sims, Redondo Beach, Calif., assignors to California R & D Center, Pacific Palisades, Calif.
Filed Jan. 10, 1972, Ser. No. 216,878
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 C



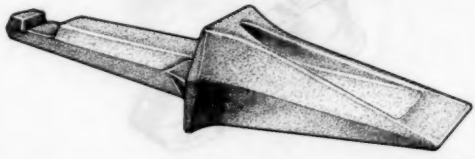
228,933
WHISTLE
Mary R. Forrest, 36 Haslemere Road, Toronto 12, Ontario, Canada, and Mary M. Walpole, 450 Walmer Road, Apt. 1004, Toronto, Ontario, Canada
Filed Mar. 10, 1972, Ser. No. 233,846
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 C

228,934
POT FOR PLANTS AND THE LIKE
Frank E. Humphries, 1128 26th Ave., Apt. 104, Greeley, Colo. 80631, and Milford H. Brinkerhoff, 15 Sunset Drive, Englewood, Colo. 80110
Filed Oct. 6, 1972, Ser. No. 291,070
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 A

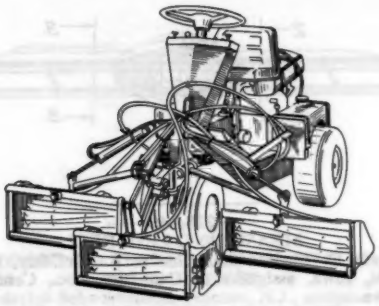
228,935
LENS EDGING MACHINE
Donald K. Hannaman, Montague, Mich., assignor to Rigel Manufacturing Company, Whitehall, Mich.
Filed Feb. 24, 1972, Ser. No. 229,253
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D37—1 A

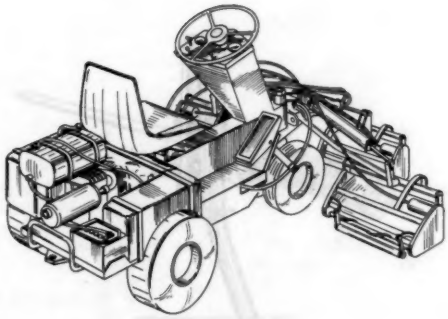


228,936
DIGGING TOOTH
Sten Johan Dahlberg, Karlskoga, and Nils Ingvar Vikstrom, Hagersten, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden
Filed Apr. 26, 1972, Ser. No. 247,932
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D39—1 R

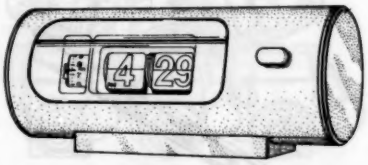


228,937
GOLF GREENS MOWER
Charles E. Sorenson, Mount Vernon, and Arnold A. De Baille, Evansville, Ind., assignors to Hahn, Inc., Evansville, Ind.
Filed Jan. 13, 1972, Ser. No. 217,720
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 C





228,938
DIGITAL CLOCK
Riki Watanabe, Tokyo, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-to, Japan
Filed Aug. 1, 1972, Ser. No. 277,037
Claims priority, application Japan Feb. 2, 1972
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 R

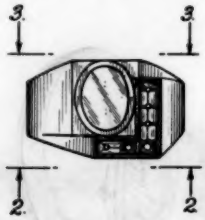


228,939
WRISTWATCH
Rene Bannwart, Sr., La Chaux de Fonds, Switzerland, assignor to Corum Watch Corporation, New York, N.Y.
Filed Dec. 8, 1971, Ser. No. 206,239
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D42—8 R

228,940
FINGER RING
Bernard I. Mechanic, 2425 Oakton St., Evanston, Ill. 60202
Filed Nov. 5, 1971, Ser. No. 196,259
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10 C

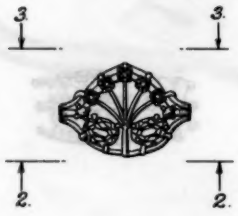
228,941
FINGER RING
Bernard I. Mechanic, 2425 Oakton St., Evanston, Ill. 60202
Filed Mar. 6, 1972, Ser. No. 232,333
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10 C

228,942
FINGER RING
Bernard I. Mechanic, 2425 Oakton St., Evanston, Ill. 60202
Filed Mar. 9, 1972, Ser. No. 233,403
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10 C



228,943
FINGER RING
Bernard I. Mechanic, 2425 Oakton St., Evanston, Ill. 60202
Filed Oct. 18, 1971, Ser. No. 190,440
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10 C

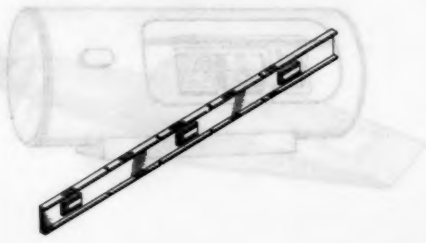
228,944
FINGER RING
Bernard I. Mechanic, 2425 Oakton St., Evanston, Ill. 60202
Filed Feb. 17, 1972, Ser. No. 227,343
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10 C



228,945
FINGER RING
Bernard I. Mechanic, 2425 Oakton St., Evanston, Ill. 60202
Filed Nov. 4, 1971, Ser. No. 195,892
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10 C

228,946
MEASURING LINE REEL
Kenneth D. Bucklin and Charles A. McCarty, Centerville, Iowa, assignors to Cam-Line, Inc., Centerville, Iowa
Filed Oct. 20, 1971, Ser. No. 191,134
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—1 R

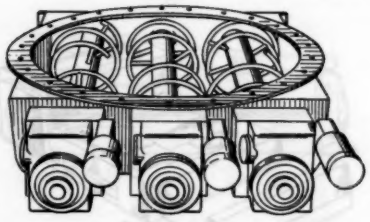
228,947
MAGNETIC SUPPORTED TEMPLATE
John R. Mason, Los Angeles, Calif., assignor to Dracon Industries, Chatsworth, Calif.
Filed Apr. 2, 1971, Ser. No. 130,877
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D52—6 A



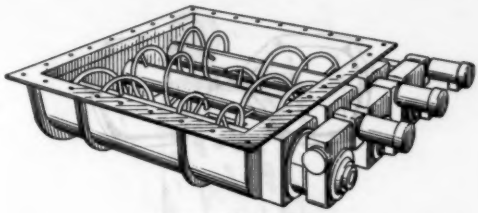
228,948
POCKET LEVEL
Maarten Cornelis de Jong, Canton, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Nov. 8, 1971, Ser. No. 196,857
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 A

228,949
COMBINED THERMAL PIN AND MEAT THERMOMETER
Frederick Schwartzstein, Trenton, N.J., assignor to Blackstone Industries, Inc., Trenton, N.J.
Filed Feb. 17, 1972, Ser. No. 227,314
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—7 R

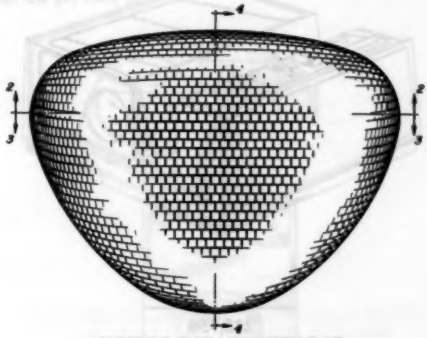
228,950
BIN DISCHARGER
Ronald J. Ricciardi, 108 Malcolm Ave., Garfield, N.J. 07026
Filed July 15, 1971, Ser. No. 163,132
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 D



228,951
BIN DISCHARGER
Ronald J. Ricciardi, 108 Malcolm Ave., Garfield, N.J. 07026
Filed July 15, 1971, Ser. No. 163,131
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 D



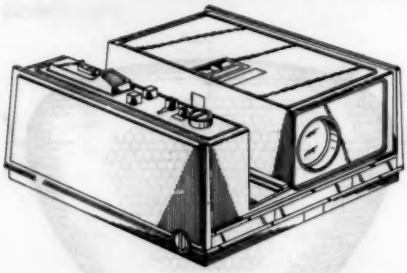
228,952
ENGINE AIR INTAKE FILTER MEDIUM HOLDER
John Wilfred Bruderlin, Chiswick, New South Wales, Australia, assignor to Lynx Engineering (Sales) Pty. Limited, Croydon, New South Wales, Australia
Filed Mar. 30, 1971, Ser. No. 129,659
Claims priority, application Australia Nov. 4, 1970
Term of patent 14 years
Int. Cl. D12—*14;* D15—*01*
U.S. Cl. D55—1 R



228,953
PORTABLE RADIO CABINET
Melvin H. Boldt, Glenview, and Francis J. Greb, Chicago, Ill., assignors to Zenith Radio Corporation, Chicago, Ill.
Filed Jan. 19, 1972, Ser. No. 219,205
Term of patent 3½ years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

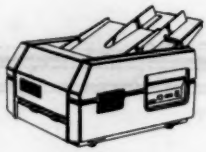
228,954
PAIR OF SPECTACLES
Anthony Shindler, Brookline, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Mar. 22, 1972, Ser. No. 237,228
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

228,955
SOUND-SLIDE PROJECTOR
Joseph R. Mango, Midlothian, and Donald G. Wolfe, Lake Barrington, Ill., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed June 9, 1972, Ser. No. 261,570
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1 J

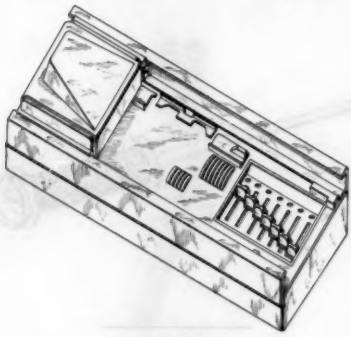


228,956
ELECTROSTATIC COPIER
Masayuki Sakuma, Yokohama, and Shuichi Yahata, Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed July 31, 1972, Ser. No. 276,428
Claims priority, application Japan Feb. 21, 1972
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q

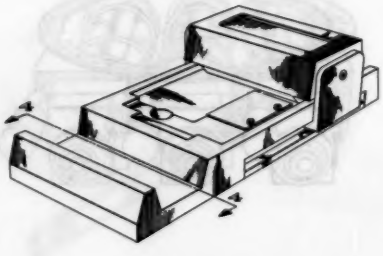
228,957
ELECTROSTATIC COPIER
Hideki Ishii, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed May 30, 1972, Ser. No. 258,234
Claims priority, application Japan Dec. 2, 1971
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



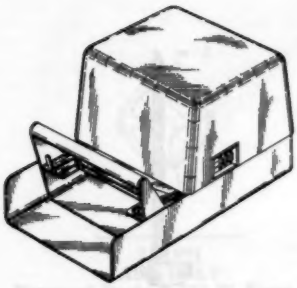
228,958
VARIABLE AMOUNT IMPRINTER
Franklin O. Geiger, Manassas, Va., assignor to Farrington Business Machines Corporation, Springfield, Va.
Filed Aug. 1, 1972, Ser. No. 277,081
Term of patent 7 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 B



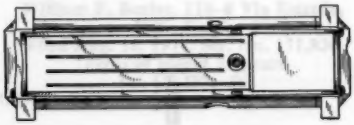
228,959
CREDIT CARD IMPRINTER MACHINE OR THE LIKE
Charles G. Scott, 5083 Kingston Way, San Jose, Calif. 95130
Continuation-in-part of design application Ser. No. 23,232, June 1, 1970. This application Sept. 1, 1971, Ser. No. 177,201
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 B

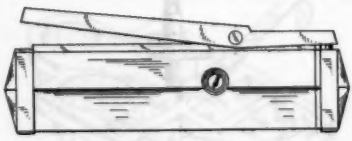


228,960
COMBINED COUNTING AND PRINTING MACHINE
Peter Alway, Bushey, England, assignor to English Numbering Machines Limited
Filed Nov. 24, 1972, Ser. No. 309,105
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 R



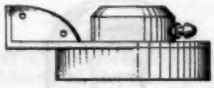
228,961
PORTABLE PNEUMATICALLY POWERED HYDRAULIC PUMP
Marcel P. D'Haem, New Hartford, and W. Leslie Jones, Frankfort, N.Y., assignors to Chicago Pneumatic Tool Company, New York, N.Y.
Filed June 2, 1971, Ser. No. 149,415
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1





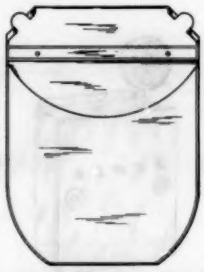
228,962
FIRE DETECTION SYSTEM
Thomas A. Rausch, White Bear Lake, Minn., assignor to Elan Industries, Inc., St. Paul, Minn.
Filed Mar. 3, 1971, Ser. No. 120,795
Term of patent 14 years
Int. Cl. D29—*01*
U.S. Cl. D72—1 R

228,963
CRANKCASE EMISSION FLUID SEPARATOR
Vernon L. Mihm, 4736 Isabella Ave., Fair Oaks, Calif. 95628; and William E. White, 4430 Barrett Road; and Stanley Watson, 6448 Rampart Drive, both of Carmichael, Calif. 95608
Filed Apr. 16, 1971, Ser. No. 134,931
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D77—1 A



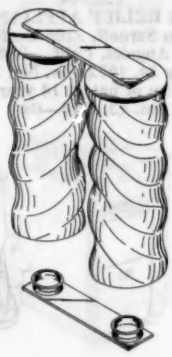
228,964
PAIN RELIEF APPLIANCE
Caron Sarnoff, 3206 Corinth, Los Angeles, Calif. 90066
Filed July 24, 1972, Ser. No. 274,410
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 K

228,965
URINE POUCH
Daniel L. Dube, 1259 49th St., Brooklyn, N.Y. 11219
Filed Aug. 2, 1971, Ser. No. 168,535
Term of patent 14 years
Int. Cl. D24—*05*
U.S. Cl. D83—1 U



228,966
BED-PAN LINER
Kenneth Wilson Mills, Bolton, England, assignor to Vernon & Company (Pulp Products) Limited, Bolton, Lancashire, England
Filed June 2, 1972, Ser. No. 259,367
Claims priority, application Great Britain Dec. 9, 1971
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 V

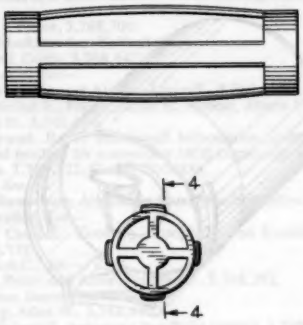
228,967
FOOT MASSAGER OR SIMILAR ARTICLE
Joseph A. Holladay, 1304 Amity Ave., Nampa, Idaho 83651
Filed July 28, 1971, Ser. No. 167,067
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D83—1 S



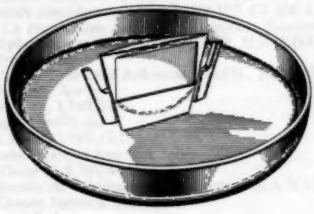
228,968
PIERCING DEVICE FOR A DUAL COMPARTMENT MEDICAMENT CONTAINER
George K. Burke and Kenneth Raines, Bethlehem, Pa., assignors to Burron Medical Products, Inc., Bethlehem, Pa.
Original design application June 15, 1971, Ser. No. 153,490. Divided and this application Nov. 30, 1972, Ser. No. 310,992
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 A

228,969
PIERCING DEVICE FOR A DUAL COMPARTMENT MEDICAMENT CONTAINER
George K. Burke and Kenneth Raines, Bethlehem, Pa., assignors to Burron Medical Products, Inc., Bethlehem, Pa.
Filed June 15, 1971, Ser. No. 153,490
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D83—12 A

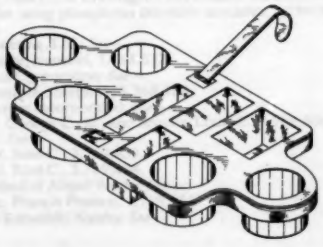
228,970
CATHETER RETAINER
Charles H. Cohen and Vernon F. Leonard, Denver, Colo., assignors to Goldberg Plastics, Inc., Denver, Colo.
Filed Mar. 15, 1971, Ser. No. 124,647
Term of patent 14 years
Int. Cl. D24—02
U.S. Cl. D83—12 A



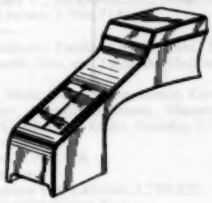
228,971
ASH TRAY
Raymond Brodeur, 370 W. Sauve St., Montreal 357, Quebec, Canada
Filed May 22, 1972, Ser. No. 255,949
Term of patent 7 years
Int. Cl. D27—03
U.S. Cl. D85—2 H



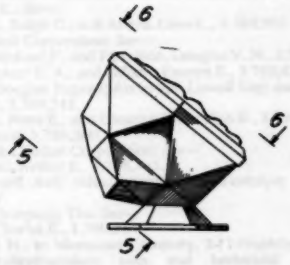
228,972
BEVERAGE TRAY FOR VEHICLES
William F. Bealer, 118-0 Via Estrada, Laguna Hills, Calif. 92653
Filed Aug. 16, 1971, Ser. No. 171,836
Term of patent 14 years
Int. Cl. D7—99
U.S. Cl. D87—1



228,973
ARTICLE STORAGE UNIT
Raymond A. Waldsmith, Folsom, Calif. (1531 Forni Road, Placerville, Calif. 95667)
Filed Oct. 28, 1971, Ser. No. 193,611
Term of patent 7 years
Int. Cl. D3—99
U.S. Cl. D87—1 R

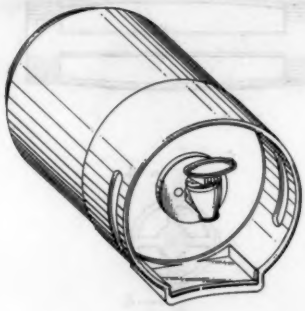


228,974
SMALL ARTICLE CONTAINER OR THE LIKE
Rose G. Maiuro and Florence Y. Maiuro, both of 2543 S. Broad St., Philadelphia, Pa. 19148
Filed Apr. 12, 1971, Ser. No. 133,480
Term of patent 14 years
Int. Cl. D3—99
U.S. Cl. D87—1 R



228,975
UMBRELLA
Jeffrey Schertz, New York, N.Y., assignor to Schertz Umbrellas, Inc., New York, N.Y.
Filed July 17, 1972, Ser. No. 272,100
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D88—3 R

228,976
BEVERAGE DISPENSING TANK OR SIMILAR ARTICLE
Calvin L. Wilson and John H. Fox, Jr., Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.
Filed Dec. 28, 1971, Ser. No. 213,232
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D94—3 B



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TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF OCTOBER, 1973

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AB Svenska Maskinverken Kallhall: *See—*
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Adamian, Michael R. Automatic headlight control. 3,769,519, Cl. 307-10.01s.

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Adams, Dale C., to Ford Motor Company. Split torque drivetrain for multiple wheel vehicle. 3,768,821, Cl. 180-7.00a.

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Adiego De La Parra, Luis Antonio, to Empresa Nacional de Optica, S.A. Multiple slide projector. 3,768,899, Cl. 353-82.000.

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Ahlstone, Arthur G., to Vetco Offshore Industries, Inc. Light weight marine riser pipe. 3,768,842, Cl. 285-55.000.

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Aichenegg, Paul C., to Chemagro Corporation. Methods of combatting nematodes using phosphono thioester amidates. 3,769,407, Cl. 424-219.000.

Aida Engineering, Ltd.: *See—*
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Air Logistics Corporation: *See—*
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Alburn, Harvey E.: *See—*
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Alburn, Harvey E.; and Fletcher, Horace, III, to American Home Products Corporation. 3-Oxa-1-azaspiro[4,4]non-7-ene-2,4-dione and derivatives thereof. 3,769,296, Cl. 260-307.00b.

Aldred, John Phillip; Bastian, James Winslow; and Kleszynski, Richard Raymond, to Armour Pharmaceutical Company. Methods for obtaining diuresis. 3,769,405, Cl. 424-177.000.

Alexandre, Pierre; and Lezy, Renee. Method and means for additionally improving the stability and traction of vehicles especially in braking. 3,768,599, Cl. 188-5.000.

Allais, Andre: *See—*
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Allen, Duane W.; and Moe, James M., to Chemetron Corporation. Stabilized reduced copper-zinc oxide catalyst and method for the production thereof. 3,769,236, Cl. 252-463.000.

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Allen, Joseph C.; and Teasdale, Thomas S., to Texaco Inc. Oil recovery process utilizing superheated gaseous mixtures. 3,768,559, Cl. 166-272.000.

Allen, Thomas E.: *See—*
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Allied Tube & Conduit Corporation: *See—*
Ostrowski, Arthur E., 3,768,145.

Alliger, Howard. Auto exhaust scrubber with catalyst. 3,768,981, Cl. 23-288.00f.

Allis, Louis Company, The: *See—*
Rettig, Charles E., 3,769,564.

Alt, Gerhard H., to Monsanto Company. 2-(1-Naphthyl carbamoyl)-1,1,1-trialkylhydrazinium salts and herbicidal use thereof. 3,769,341, Cl. 260-554.000.

Altair, Inc.: *See—*
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American Can Company: *See—*
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American Home Products Corporation: *See—*
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Avery, Carl F., to Medical Supply Company. Sponge with encapsulated liquid. 3,768,916, Cl. 401-132.000.

Avery Products Corporation: *See—*
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Azarowicz, Edward N., to Bioteknika International, Inc. Microbial degradation of petroleum. 3,769,164, Cl. 195-2.000.

Bacha, John D.; and Selwitz, Charles M., to Gulf Research & Development Company. Preparation of nitrocyclopropane from 3-chloro-1-nitropropane. 3,769,355, Cl. 260-644.000.

Bacha, John D.; and Selwitz, Charles M., to Gulf Research & Development Company. Preparation of nitrocyclopropane from nitromethane and vinyl bromide. 3,769,356, Cl. 260-644.000.

Bacha, John D.; and Selwitz, Charles M., to Gulf Research & Development Company. Preparation of nitrocyclopropane from nitromethane and a 1,2-dihaloethane. 3,769,357, Cl. 260-644.000.

Bachmann, Wolfgang: *See*—
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Back, Karl Johan; and Kyla-Junnila, Aimo, to Oy Cyklop AB. Lifting piece for hoisting a large package or the like. 3,768,852, Cl. 294-74.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See*—
Leutner, Bernd; Schwarzmann, Matthias; and Ohlinger, Manfred, 3,769,087.

Baer, Erhardt Hermann. Process of separation of emulsified or dispersed matter from water. 3,769,207, Cl. 210-44.000.

Baglai, Vitaly Mikhailovich: *See*—
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Baglai, Vitaly Mikhailovich; Tsukanov, Georgy Emmanuilovich; Bondarenko, Oleg Petrovich; Bogachenko, Alexei Georgievich; Stupak, Leonid Mikhailovich; Martyn, Viktor Mikhailovich; Shtanko, Jury Pavlovich and Pavliichuk, Georgy Anatolievich, 3,768,541.

Bahl, Lalit R.; Barnea, Daniel I.; Grossman, David O.; and Kobayashi, Hisashi, to International Business Machines Corporation. Finite memory adaptive predictor. 3,769,453, Cl. 178-6.000.

Bahorich, Joseph P., to Ford Motor Company. Coasting downshift control valve for an automatic power transmission control valve circuit. 3,768,338, Cl. 74-864.000.

Bailey, Escar L.: *See*—
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Bain, Joe K.: *See*—
Sanz, Manuel C.; Sturgis, Byron E.; Lawson, Charles V.; and Bain, Joe K., 3,768,526.

Bain, Larry M.: *See*—
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Baker, Eugene E., to Halliburton Company. Cementing tool. 3,768,556, Cl. 166-154.000.

Baker, Eugene E., to Halliburton Company. Full opening multiple stage cementing tool and methods of use. 3,768,562, Cl. 166-289.000.

Baker, Paul E.: *See*—
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Baldwin, Peter John: *See*—
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Balut, Ernst: *See*—
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Bangert, Charles, Jr., to General Electric Company. Electrical fire and shock protective apparatus. 3,769,549, Cl. 317-18.00a.

Bannister, Ralph R.; Harris, Gabriel W.; and Boston, Joseph F., to Union Carbide Corporation. Extractive distillation with subsequent lower pressure adiabatic vaporization. 3,769,217, Cl. 203-53.000.

Baptista, John: *See*—
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Baranowski, Frank, Jr. Gas torch. 3,768,962, Cl. 431-353.000.

Baresel, Detlef, to Bosch, Robert, G.m.b.H. Method for producing fuel cell electrodes having high activity. 3,769,094, Cl. 136-122.000.

Barker, Joseph K. Portable collapsible shelter. 3,768,860, Cl. 297-184.000.

Barlow, George Edward, to Imperial Chemical Industries, Limited. Fibrous sheet materials and filter elements formed therefrom. 3,769,148, Cl. 161-123.000.

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Barnes, Vernon M., Jr.; and Eisenlohr, Gerald M., to Texaco Inc., mesne. Inlet port covers for reaction vehicle. 3,768,255, Cl. 60-2.450.

Barnett, Allan E.: *See*—
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Barnhardt, Lyall F.; and Whitmore, Bruce C. Method of producing a killed steel. 3,769,004, Cl. 75-129.000.

Barradas, George, to Venus Electric Limited. Implement for setting hair. 3,768,491, Cl. 132-36.00r.

Barrett, A. Lee. Direct contact food freezer. 3,768,272, Cl. 62-60.000.

Barrett, Fred O.: *See*—
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Barringer, Anthony Rene, to Barringer Research Limited. Method and apparatus for sensing substances by analysis of adsorbed matter associated with atmospheric particulates. 3,768,302, Cl. 73-28.000.

Barringer Research Limited: *See*—
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Barton, David W.; and Muller, George H., to Ford Motor Company. Pneumatic flexible bumper. 3,768,850, Cl. 293-71.00p.

Bartos, Harald: *See*—
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Barwise, Robert D. Tree trunk shear. 3,768,528, Cl. 144-34.00e.

Basa, Kenneth B.: *See*—
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Basa, Napoleon A. Racing or the like game apparatus. 3,768,812, Cl. 273-134.0ch.

Basso, Julius C.: *See*—
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Baugh, Benton F., to Vetco Offshore Industries, Inc. Gate valve with pressure actuated plug seat. 3,768,774, Cl. 251-175.000.

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Bayne, Gilbert M., to Merck & Co., Inc. Composition and method of treating dopamine deficiency in brain tissue. 3,769,424, Cl. 424-317.000.

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Beard, Garry E., to Ford Motor Company. Distributor breaker plate assembly. 3,769,471, Cl. 200-31.000.

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Bebinger, Jack E., to Westinghouse Electric Corporation. Food waste disposer. 3,768,744, Cl. 241-32.500.

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Beck, Henry N.; Ledbetter, Harvey D.; and Schmitt, John A., to Dow Chemical Company, The. Nucleation of normally crystalline vinylidene chloride polymers. 3,769,269, Cl. 260-91.700.

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Becke, Hans W.: *See*—
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Beckwith, Merton M.; and Hsu, Grace F., to Conversion Chemical Corporation. Bath and method for electrodepositing tin and/or lead. 3,769,182, Cl. 204-43.00s.

Beguin, Rene, to Test, Societe Anonyme d'Etudes Techniques. Fluid dispenser. 3,768,704, Cl. 222-207.000.

Behringwerke Aktiengesellschaft: *See*—
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Bell, Oliver A., Jr.; and Prophet, Thomas I., to Colt Industries Operating Corporation. Power supply circuit and method of electrical discharge machining. 3,769,483, Cl. 219-69.00c.
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Benatt, Frank George Simon; and Linton, Walter Lindsay, to Metallurgical Processes Limited and Imperial Smelting Corporation. Condensation of metal vapour. 3,768,792, Cl. 266-34.00r.
Bender, John R.; and Brooks, Peter, to Bendix Corporation, The. Wheel bearing seal. 3,768,881, Cl. 308-187.200.
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Bengelsdorff, Hans-Joachim, to Behringwerke Aktiengesellschaft. Process for the manufacture of a live vaccine against the infectious bursitis of chickens. 3,769,400, Cl. 424-89.000.
Benke, Balazs Kiss, to BKB Company. Drain check valve and mounting means. 3,768,505, Cl. 137-433.000.
Benlian, Vera, to Lee, Raymond, Organization, Inc., The. Foldable adjustable reading stand. 3,768,768, Cl. 248-456.000.
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Best, John S., to Dow Chemical Company, The. Arrangement to control heat flow between a member and its environment. 3,768,547, Cl. 165-45.000.
Bethge, Walther. Method for emplacing filament-shaped materials into thermoplastic materials and products produced thereby. 3,769,125, Cl. 156-166.000.
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Billington, Evans R., to Golconda Corporation. Regulator atmospheric pressure protector. 3,768,503, Cl. 137-377.000.
Bilow, Norman, to O'Brien Corporation, The. Thermosetting plastics and method therefor. 3,769,249, Cl. 260-28.000.
Biora, Julio L.; and Winkle, Charles V., to Richardson Chemical Company, The. Method of simultaneously electroplating and machining a metal surface. 3,769,181, Cl. 204-35.00r.
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Bonfiglio, Guy P.; and Farris, Joseph P., to United States of America, Navy. Method of making epoxy tunnel structure for plated wire memories. 3,768,155, Cl. 29-604.000.
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Borri, Frank J.; and Lindson, John T., to NL Industries, Inc. Frit composition for producing acid-resistant vitreous enamels on cast iron. 3,769,048, Cl. 106-49.000.
Bosch, Robert, G.m.b.H.: *See—*
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Botts, John W.; and Roberts, Charles W., to Goodyear Tire & Rubber Company, The. Method of making non-cracking decorative sidewalls of tires. 3,769,123, Cl. 156-116.000.
Boughton, Olin W.; and von Langen, August R., to American Optical Corporation. Microscope focus adjustment mechanism. 3,768,885, Cl. 350-84.000.
Bouiller, Jean Georges; Bauger, Louis Jules; and Lacroix, Jean-Baptiste, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Fan for gas turbine unit. 3,768,933, Cl. 417-408.000.
Boulard, Lucien. Scrubbing and massaging apparatus. 3,768,462, Cl. 128-44.000.
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Breckenridge, Robert Warren, Jr., to Little, Arthur D., Inc. Thermally isolating structural support system and cryogenic assembly embodying the same. 3,768,765, Cl. 248-146.000.
Brecy, Jean, to Framatone. Installation for measuring and controlling a nuclear reactor. 3,769,156, Cl. 176-19.000.
Bregenzer, Otto. Ground conduit construction. 3,769,445, Cl. 174-101.000.
Brenez, Jean Charles Yves. Spraying devices. 3,768,733, Cl. 239-331.000.
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Bross, Charles Frederick, to Pennwalt Corporation. Elevator-hopper-feeder-assembly. 3,768,628, Cl. 198-54.000.

Broucksou, Robert Henry, to Eaton Corporation. Flow control valve. 3,768,833, Cl. 280-150.0ab.

Brouillette, Carl V., to United States of America, Navy. Cofferdam. 3,768,265, Cl. 61-34.000.

Broussard, Douglas E.; Ayers, Ray R.; and Walker, George E., Jr., to Shell Oil Company. Mitigation of propagating collapse failures in pipelines due to external load. 3,768,269, Cl. 61-72.300.

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Brown, Paul Merrill; Davis, Donovan Chester; Gross, James Edward; and Sweet, Richard Gordon, to Gilfillan Corporation. Frequency selective pulse receiver. 3,769,591, Cl. 325-474.000.

Brown, Roger S.; Kotter, James I.; and Salaun, Harold L., Jr., to United States of America, Agriculture. Yarn twist control apparatus for electrostatic spinner. 3,768,243, Cl. 57-58.890.

Brown, Wayne M.; and Grace, William A., to United Aircraft Corporation. Chamber pressure control using free vortex flow. 3,768,921, Cl. 415-116.000.

Brown, William Brownloe, to Western Electric Company, Incorporated. Methods of and apparatus for continuously reeling strand material. 3,768,751, Cl. 242-158.200.

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Brumfield, Robert C.; and Hooper, Alton V., said Hooper, Alton V., assor. to said Brumfield, Robert C. Integral blood oxygenator and heat exchanger. 3,768,977, Cl. 23-258.500.

Brumfield, Robert C. Blood oxygenator and thermoregulator apparatus. 3,769,162, Cl. 195-1.800.

Brumfield, Robert C. Blood oxygenator flow guide. 3,769,163, Cl. 195-1.800.

Brunner, Gerald F., to Towmotor Corporation. Fluid clutch housing. 3,768,613, Cl. 192-113.00b.

Brunnett, Carl J.; and Ioannou, Basil N., to Picker Corporation. Automatic dot factor system for a scintillation device and method of operation. 3,769,508, Cl. 250-369.000.

Bruno, Edward C. Container cover and method of affixing same. 3,768,230, Cl. 53-38.000.

Bruno, Edward C., to Manetti, Mario. Nestable net produce bag and carrier therefor. 3,768,643, Cl. 206-65.00k.

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Buntschuh, Robert Frank; and Rouland, Henry George, to RCA Corporation. Rate aided ranging and time dissemination receiver. 3,769,589, Cl. 325-419.000.

Burke, George K.; and Raines, Kenneth, to Burron Medical Products, Inc. Hypodermic syringe body structure. 3,768,474, Cl. 128-220.000.

Burkert, Christian. Elastic sealing gasket. 3,768,819, Cl. 277-206.00r.

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Butter, Karl; Kaufmann, Michael; and Dederra, Helmut, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Thrust gas generator having a combustion chamber and thrust nozzle regeneratively cooled by a liquid. 3,768,256, Cl. 60-260.000.

Byrne, Michael F.; and Powelson, Douglas V. N., to Allied Chemical Corporation. Plastic pipe joint. 3,768,841, Cl. 285-21.000.

Cabot Corporation: *See*—
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Cais, Michael; Gamble, Fred R., Jr.; and Osiecki, Jeanne Helen, to Synvar Associates. Chalcogenides intercalated with ammonium and non-heavy metal inorganic salts and hydroxides. 3,769,210, Cl. 252-25.000.
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Caldwell, Samuel I.; and Cline, Lawrence R., to Caterpiller Tractor Company. Air-cooled resilient coupling assembly. 3,768,276, Cl. 64-11.00r.
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Campbell, James W., to Haltom City State Bank. Method and apparatus for cutting panels. 3,768,352, Cl. 83-104.00r.
Campbell, James W., to Halton City State Bank, mesne. Method and apparatus for cutting panels. 3,768,796, Cl. 269-34.000.
Campbell, Trevor G., to Caterpillar Tractor Company. Multi-movement single lever control. 3,768,328, Cl. 74-471.0xy.
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Candel, Sebastien M. Liquid aeration method and apparatus. 3,768,788, Cl. 261-122.000.
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Carpenter, Wayne R.; and Bens, Everett M., to United States of America, Navy. Chemiluminescent formulation of increased light output. 3,769,227, Cl. 252-188.300.
Carre, Jean-Jacques, to Societe Anonyme D.B.A. Disc brake with anti-vibration anchoring arrangement. 3,768,605, Cl. 188-73.500.
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Chalmers, Alexander Michael, to Ciba-Geigy Corporation. Polymers containing diazepinone as an ultraviolet stabilizer. 3,769,259, Cl. 260-45.80n.
Chamberlin, Richard M.; and Bjornkjaer, Leif, to Westinghouse Electric Corporation. Modular arrangement of falling film multiple effect vaporator. 3,768,539, Cl. 159-13.00a.
Champeau, Charles A. Method of making a building material from waste stock from a papermaking process. 3,769,116, Cl. 156-62.800.
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Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, to Hoffmann-La Roche Inc. Phenyl alkenyl ethers. 3,769,320, Cl. 260-473.00r.
Christianus, Jacobus Johannes: *See—*
Mann, Adriaan Barend; and Christianus, Jacobus Johannes, 3,768,580.

Christy, Harold Lindsay, to Motorola, Inc. Micromanipulator utilizing a constant velocity universal joint. 3,768,331, Cl. 74-491.000.

Chrysler Corporation: *See—*
Hurst, Francis Carl, 3,768,453.

Chu, Edward, to Du Pont de Nemours, E. I., and Company. Electrophoretic coating of aluminum and tin articles. 3,769,187, Cl. 204-181.000.

Chu, William M.; Lee, James M.; and Sonoda, George, to International Business Machines Corporation. Low power FET driver circuit. 3,769,528, Cl. 307-270.000.

Chudey, Ivan: *See—*
Wawre, Carl-Martin; and Chudey, Ivan, 3,769,594.

Ciarfello, Matthew J. Universal portable arrangement for delineating playing fields for games. 3,768,809, Cl. 273-1.00a.

Ciba-Geigy AG: *See—*
Hubele, Adolf, 3,769,423.
Kolliker, Hans-Peter; Staub, Alfred; and Hindermann, Peter, 3,769,305.
Toepfl, Rosemarie; Abel, Heinz; and Maeder, Arthur, 3,769,365.

Ciba-Geigy Corporation: *See—*
Chalmers, Alexander Michael, 3,769,259.
Hargreaves, James Roger; Jeffrey, Raymond; and Hickmott, Peter William, 3,769,284.
Hoyle, William; and Howarth, Graham Arton, 3,769,295.
Prelog, Vladimir; Zaehner, Hans; and Bickel, Hans, 3,769,418.
Spivack, John D., 3,769,372.

Cincinnati Milacron Inc.: *See—*
Haggerty, William Andrew, 3,769,194.

Ciraud, Pierre Alfred Leon. Device for heating and cooling various products. 3,768,552, Cl. 165-107.000.

Cities Service Company: *See—*
Roth, Shirley H., 3,769,073.
Roth, Shirley H., 3,769,074.
Roth, Shirley H., 3,769,075.
Roth, Shirley H., 3,769,076.
Roth, Shirley H., 3,769,077.
Roth, Shirley H.; and Green, Joseph, 3,769,078.
Roth, Shirley H., 3,769,079.
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Roth, Shirley H., 3,769,081.
Roth, Shirley H., 3,769,082.
Roth, Shirley H., 3,769,083.
Roth, Shirley H., 3,769,343.

Clampitt, Bert Howard; Henry, Raymond Myrl; and Jones, Joseph William, Jr., to Gulf Research & Development Company. Method of preparing stable copolymers of ethylene and at least one ethylenically unsaturated carboxylic acid and the product obtained thereb. 3,769,261, Cl. 260-45.90r.

Clark, Charles T., Jr., to Polar Corporation. Coded radiation reflective lock. 3,769,514, Cl. 250-341.000.

Clark, Charles T., Jr., to Polar Corporation. Electro-optical lock and method. 3,769,515, Cl. 250-341.000.

Clark Equipment Company: *See—*
Stuller, Howard E., 3,768,856.
Walser, Melvin L., 3,768,836.

Clarke, John W., to Lilly, Eli, and Company. Display container. 3,768,638, Cl. 206-45.340.

Clarkson Industries, Inc.: *See—*
Hoag, Don H., 3,768,657.

Clelland, David Watson, to United Kingdom Atomic Energy Authority. Tanks for liquids containing fissionable material. 3,768,782, Cl. 259-4.000.

Clevenger, Loyd H.: *See—*
Sloan, Benjamin Johnston; Martin, Billy M.; Clevenger, Loyd H.; and Dunn, Roger S., 3,768,150.

Click, Michael K.; and Timmons, Jerry L., to Carborundum Company, The. Tube guide for filtering apparatus. 3,768,655, Cl. 210-236.000.

Cline, Lawrence R.: *See—*
Caldwell, Samuel I.; and Cline, Lawrence R., 3,768,276.

Cloud, James E., to Special Machinery, Inc. Carrier for a heavy load including a boom. 3,768,670, Cl. 214-75.00h.

CMX Systems, Inc.: *See—*
Scaggs, Lee Edward, 3,769,611.

Coates, Ronald Bell, to Imperial Chemical Industries, Limited. Filter seal. 3,768,661, Cl. 210-449.000.

Cobb, Richard E.; and Lanigan, Richard W., to American Hospital Supply Corporation. Disposable flatware container. 3,768,691, Cl. 220-40.00r.

Coco, Spencer G., to LCM Corporation. Structural means and a process for the manufacture thereof. 3,768,530, Cl. 144-318.000.

Coddington, David M.; and Marsh, William D., to Esso Research and Engineering Company. Halogenated butyl tubeless tire innerliner. 3,769,122, Cl. 156-115.000.

Cogar Corporation: *See—*
Reda, Anthony F.; and Wharmby, James D., 3,768,134.

Cohen, Dan: *See—*
Heartz, Robert A.; and Cohen, Dan, 3,769,442.

Coleman, Bernard: *See—*
Krick, John B.; and Coleman, Bernard, 3,769,529.

Coleman, Bestor P., to Interlake, Inc. Strap track for strapping machine. 3,768,396, Cl. 109-26.000.

Coleman Company, Inc., The: *See—*
Houle, Michel, 3,768,323.

Coleman, George E., to PPG Industries, Inc. Controlled atmosphere chamber. 3,769,517, Cl. 250-455.000.

Coley, Kenneth R., to Westinghouse Electric Corporation. Panelboard with insulation snap in support means. 3,769,553, Cl. 317-119.000.

Colgate Palmolive Company: *See—*
Hewitt, Gordon Trent, 3,769,398.
Yurko, Joseph A.; Ramachandran, Pallassana; Cheng, Bao-Ding; and Dickson, Robert E., 3,769,222.

Colgate-Palmolive Company: *See—*
Inamorato, Jack Thomas, 3,769,224.

Collins, Terence John, to Tiltman Langley Limited. Coin-rejecting device. 3,768,618, Cl. 194-102.000.

Colman, Richard; and Mangelsdorf, David H., to United States of America, Army, mesne. Cold weather face mask. 3,768,100, Cl. 2-9.000.

Colovas, Denny D.; Logan, John S.; and Skruch, Richard R., to Ford Motor Company. Vehicle suspension. 3,768,829, Cl. 280-124.00r.

Colt Industries Operating Corporation: *See—*
Bell, Oliver A., Jr.; and Prophet, Thomas I., 3,769,483.

Combustion Engineering, Inc.: *See—*
Schukei, Glen Elwin, 3,768,668.
Zinn, Walter H.; and Lichtenberger, Harold V., 3,769,159.

Comer, Glen S., Jr.; and Allen, Thomas E., to Caterpillar Tractor Company. Control mechanism for power shift transmission. 3,768,329, Cl. 74-477.000.

Cometta, Carl: *See—*
Hodosh, Milton; and Cometta, Carl, 3,768,472.

Commercial Decal, Inc.: *See—*
Blanco, Louis A., 3,769,055.

Commercial Shearing & Stamping Company: *See—*
Chlumecky, Nicholas, 3,768,267.

Commissariat a l'Energie Atomique: *See—*
Costes, Didier, 3,769,161.

Communications Satellite Corporation: *See—*
Lindmayer, Joseph, 3,769,558.

Community Gin Company: *See—*
Jennings, Samuel J., 3,768,467.

Compagnie des Montres Longines: *See—*
Portmann, Hubert F., 3,768,887.

Compagnie Francaise de Raffinage: *See—*
Peyrot, Jean, 3,769,368.

Compagnie Francaise des Petroles: *See—*
Rederon, Christian, 3,768,581.

Compuline Corporation: *See—*
Jones, John Paul, Jr., 3,769,557.

Concord Laboratories, Inc.: *See—*
Raitto, Russell G., 3,768,476.

Conlan, William A., Jr.: *See—*
Dutkewych, Oleh Borys; and Conlan, William A., Jr., 3,769,061.

Conley, Edward F.: *See—*
Lew, Sandy Y.; and Conley, Edward F., 3,769,240.

Connaught Laboratories, Limited, mesne: *See—*
Fenje, Paul, 3,769,415.

Connelly, Joseph J.: *See—*
Adams, Cecil E.; Connelly, Joseph J.; and Krehlik, Joseph F., 3,768,378.

Conner, Charles J., to United States of America, Agriculture. Activated single bath pearl gray chrome green mineral dyeing and compositing therefor. 3,768,965, Cl. 8-17.000.

Connolly, Denis, to Sund-Borg Machines Corporation. Mold clamp. 3,768,952, Cl. 425-450.000.

Connor, Denis John, to Bell Telephone Laboratories, Incorporated. Video encoder utilizing columns of samples encoded by prediction and interpolation. 3,769,451, Cl. 178-6.000.

Conrad Schmitt Studios, Inc.: *See—*
Gruenke, Bernard L., Jr., 3,769,113.

Consan Packfic Incorporated: *See—*
Smith, Harold W.; and Saurenman, Donald G., 3,768,258.

Consolidated Metco, Inc.: *See—*
Markland, Richard D., 3,768,454.

Consonni, Pietro: *See—*
Omodei-Sale, Amedeo; and Consonni, Pietro, 3,769,282.

Container Corporation of America: *See—*
Carpenter, John L.; and Ostler, Charles R., 3,768,721.

Continental Oil Company: *See—*
Boyer, London D., 3,769,167.

Contraves AG: *See—*
Schoen, Kurt, 3,769,582.

Conversion Chemical Corporation: *See—*
Beckwith, Merton M.; and Hsu, Grace F., 3,769,182.

Conway, Tim D.; and Paddock, Paul F., to Sunkist Growers, Inc. Method and means for automatically detecting and sorting produce according to internal damage. 3,768,645, Cl. 209-111.500.

Cook, Gerald H., to Polaroid Corporation. Photographic cassette containing film strip programmed for manual and automatic operation and film processor therefor. 3,768,894, Cl. 352-130.000.

Cook, Henry F.; and Sutherland, James F., to Westinghouse Electric Corporation. Process control apparatus and method. 3,769,552, Cl. 317-112.000.

Cook, James M., III; and Dow, Eugene, to Oakland Plastics Corporation. Pallett. 3,768,423, Cl. 108-51.000.

Cook, Richard Erwin; Fitzhugh, Donald Lewis; and Luckey, George Wilson, to Du Pont de Nemours, E. I., and Company. Method of making a tube of plastic film. 3,769,397, Cl. 264-209.000.

Cook, Shirl E.; and Henderson, Samuel R., to Ethyl Corporation. Treatment of waste brines. 3,769,208, Cl. 210-57.000.

Coors Porcelain Company: *See—*

Sellers, David J.; and Roy, Donald W., 3,768,990.
Cor-Sen Plastic, Ltd.: *See—*
Corty, Richard L., Sr.; and Iversen, Edward P., 3,768,698.
Corman, James; Walmet, Gunnar E.; Urbaetis, Stanely P.; and Dimond, Herbert M., to General Electric Company. Circuit breaker with heat pipe cooling means. 3,769,551, Cl. 317-100.000.
Cornell Aeronautical Laboratory, Inc.: *See—*
Vassallo, Franklin A., 3,768,191.
Corning Glass Works: *See—*
Dumbaugh, William H., Jr., 3,769,047.
Corsmeier, Robert J.; Savage, Joseph W.; and Andersen, Richard H., to General Electric Company. Boltless blade and seal retainer. 3,768,924, Cl. 416-95.000.
Corty, Richard L., Sr.; and Iversen, Edward P., to Cor-Sen Plastic, Ltd. Pour spout. 3,768,698, Cl. 222-91.000.
Cosden Oil & Chemical Company: *See—*
Wiley, Donald Field, 3,769,380.
Costes, Didier, to Commissariat a l'Energie Atomique. Reactor vessel supporting device. 3,769,161, Cl. 176-87.000.
Coulter Electronics, Inc.: *See—*
Proni, Oscar, 3,768,727.
Coulter, Leland E., to Teledyne, Inc. Apparatus for cutting workpieces. 3,768,350, Cl. 83-51.000.
Court, Patrick R. J., to Optical Systems Corporation. Audio encoding/decoding system for CATV. 3,769,448, Cl. 178-5.100.
Courtaulds Limited: *See—*
Braker, James William, 3,768,245.
Cowles, Tommie; and McKittrick, Clarence. Fence border. 3,768,780, Cl. 256-1.000.
Cox, Arthur, to Austin Company, The. Optical system having diverting system. 3,768,889, Cl. 350-199.000.
Cox, Charles W., to Automatic Power, Inc. Battery charging system. 3,769,567, Cl. 320-27.000.
Cox, Lawrence Alfred, to British Oxygen Company Limited, The. Ventilators. 3,768,468, Cl. 128-145.800.
Cox, Lawrence J., to American La France, Inc., mesne. Cooling tower sprinkler nozzle. 3,768,736, Cl. 239-504.000.
Cox, Russell, to Square D Company. Safety switch operating mechanism. 3,768,321, Cl. 74-97.000.
Cram, Robert Dana, to High Voltage Engineering Corporation. Method of intimately bonding thermoplastics. 3,769,132, Cl. 156-286.000.
Cramer, Robert L., to Bendix Corporation, The. Inflatable life raft. 3,768,761, Cl. 244-138.00r.
Crane Company: *See—*
Hirzel, Edgar A., 3,768,873.
Crane, Ronald C., to Kodon, Inc. Circuit arrangement for operating electric arc discharge devices. 3,769,545, Cl. 315-219.000.
Creasey, Jack R.: *See—*
Hess, Roland H.; Hoekje, Howard H.; Creasey, Jack R.; and Strain, Franklin, 3,768,537.
Creevy, Robert J., to Xttrium Laboratories, Inc. System for handling clinical thermometers. 3,768,634, Cl. 206-16.600.
Cripe, Maxwell L.: *See—*
Grabb, Frederick G.; Cripe, Maxwell L.; and Gardner, Delbert J., 3,768,366.
Crone, Basil Scott. Apparatus for joining continuously moving web material. 3,768,746, Cl. 242-58.300.
Cudzik, Daniel F., to Reynolds Metals Company. Forming apparatus and method. 3,768,295, Cl. 72-347.000.
Curlator Corporation: *See—*
Wood, Dennis E., 3,768,119.
Curry, Barney George. Head scratcher. 3,768,463, Cl. 128-67.000.
Curtis, Brian K., to Bell & Howell Company. Information recording on elongate carriers with carrier presence and/or position determination. 3,769,470, Cl. 179-100.20s.
Curtis Dyna-Products Corporation: *See—*
Curtis, Russell R.; and Jung, James E., 3,768,732.
Curtis, Rolando T., to Integrated Ceilings, Inc. Ceiling grid system with interlocked joints. 3,768,224, Cl. 52-668.000.
Curtis, Russell R.; and Jung, James E., to Curtis Dyna-Products Corporation. Intermittent liquid metering system and apparatus. 3,768,732, Cl. 239-70.000.
Cutters Machine Company, Inc.: *See—*
Martin, Thomas W., Sr.; and Martin, Thomas W., Jr., 3,768,799.
Cyphelly, Ivan Jaroslav. Rotary control valve. 3,768,516, Cl. 137-625.460.
Czajkowski, Norman; Cammack, Thomas A.; Pickler, William C.; and Donahue, William J., to United States of America, Navy. Fuze arming device. 3,768,415, Cl. 102-70.2ga.
Czaplinski, Thomas V., to Squibb, E. R., & Sons, Inc. Transparent storage container for TC-99M eluate. 3,769,490, Cl. 250-432.000.
Czwakiel, Bert John, to General Electric Company. Pneumatic break detector sensor. 3,769,475, Cl. 200-81.900.
D&W Rankin Manufacturing Company: *See—*
Braucht, Theodore C., 3,769,486.
Da Costa, Harry; and Thornton, Charles G., to Motorola, Inc. Apparatus for profiling bonding needles. 3,768,211, Cl. 51-15.000.
Dagani, Michael J.; and Pearson, Tillmon H., to Ethyl Corporation. Process for synthesizing citric acid. 3,769,338, Cl. 260-535.00p.
Dai Nippon Toryo Kabushiki Kaisha: *See—*
Kotera, Noboru; Nishikawa, Satoru; and Sakamoto, Hitoshi, 3,769,510.
Daigo, Hiroshi: *See—*
Hashimoto, Sei; Nakatani, Keizo; Suzuki, Shoji; Daigo, Hiroshi; and Fujino, Ichizo, 3,769,244.
Daikin Kogyo Co., Ltd.: *See—*
Fujii, Tuneo; and Suzue, Seisuke, 3,769,252.
Daktronics, Inc.: *See—*
Kurtenbach, Aelred J.; Morgan, James B.; and Espeset, Paul A., 3,768,188.
Damico, Frank M.: *See—*
Schultz, John R.; Heidacher, John W.; Sharer, John M.; Adams, James S.; and Damico, Frank M., 3,769,502.
Dangremond, Rodger L.; and Reuschel, Donald L., to Ex-Cell-O Corporation. Clamping apparatus for molding machine. 3,768,953, Cl. 425-450.000.
Daniels, Donald V.: *See—*
Applequist, James E.; Johnson, James E.; Akers, Clifford B.; Daniels, Donald V.; James, Richard N.; Roberts, Daniel M.; and Guzy, Darrel James, 3,768,714.
Daniels, Louis C., to Westinghouse Electric Corporation. Static seal for a gas turbine. 3,768,817, Cl. 277-136.000.
Dankert, Walter C. Adjustable toothing device. 3,768,798, Cl. 269-289.000.
Dart Industries, Inc.: *See—*
Haag, Arthur P.; and Weiner, Meyer, 3,769,234.
Reves, E. T., 3,768,510.
Darwent, Richard H.; and Watkoskey, Anthony F.; deceased (by Watkoskey, Lorriane M.; surviving spouse), to Westinghouse Electric Corporation. Elevator flexible guide clamp safety. 3,768,597, Cl. 187-88.000.
Das, Suryya K.: *See—*
Anderson, Carl C.; Maska, Rudolf; and Das, Suryya K., 3,769,254.
D'Ascoli, Ralph G.; and Alleva, Leon L., to Anaconda Company, The, mesne. Apparatus for making electrical connector. 3,768,941, Cl. 425-112.000.
Data Time, Inc.: *See—*
Catto, Kenneth A.; and Burt, Harold R., 3,768,753.
Datawell B.V.: *See—*
Verhagen, Cornelis M., 3,768,317.
David, Dardick, to TRW Inc. Fastener ammunition for repeating propellant gas powered driving tool. 3,768,412, Cl. 102-38.000.
Davis, Dennis J.; Sudnick, Dennis J.; Juhasz, John E.; and Kurichh, Sham, to Bendix Corporation, The. Adaptive control for fluid pressure braking system. 3,768,875, Cl. 303-21.00f.
Davis, Donovan Chester: *See—*
Brown, Paul Merrill; Davis, Donovan Chester; Gross, James Edward; and Sweet, Richard Gordon, 3,769,591.
Davis, John R.: *See—*
Krishna, Sorinder; and Davis, John R., 3,769,563.
Davis, Lewis E.: *See—*
Glomski, Ronald L.; Davis, Lewis E.; and Grover, Joseph A., 3,769,247.
Davis, Robert H., to Mobil Oil Corporation. Aqueous lubricant compositions containing alkanolamine salts of carboxylic acid. 3,769,214, Cl. 252-34.00f.
Dawald, Eldon De Vere: *See—*
Armstrong, Leonard J.; and Dawald, Eldon De Vere, 3,769,311.
Dayco Corporation: *See—*
Jacob, Richard J., 3,768,524.
De Klerk, John, to Westinghouse Electric Corporation. Tapped praetersonic bulk delay line. 3,769,615, Cl. 333-30.000.
De Long, William T.; and Szumachowski, Edwin R., to Teledyne Inc. Production of an improved non-austenitic steel weld deposit. 3,769,491, Cl. 219-137.000.
De Selms, Roy C., to Chevron Research Company. Dialkylphosphorylbicyclo[n.2.0] alkanes. 3,769,377, Cl. 260-958.000.
De Vos, Ferdinand Allard; and Ter Steege, Jan Hendrik, to N.V. Werkspoor-Amsterdam. Method and apparatus for making half-tone screen printing cylinders. 3,769,455, Cl. 178-6.60r.
De Vries, Louis, to Chevron Research Company. Carbodiimides from olefins cyanamide and tert-butyl hyprochlorite. 3,769,344, Cl. 260-566.00r.
Dean, Frank J., Jr., to Tempmaster Corporation. Delayed action dampers for air terminal units. 3,768,729, Cl. 236-13.000.
Dear, Robert E. A.; and Gilbert, Everett E., to Allied Chemical Corporation. Method of fumigating insects using 2-chloromethyl-1,3-polyfluoro-2-propanols. 3,769,435, Cl. 424-343.000.
Debrie, Roger Lucien: *See—*
Riviere, Eugene; Vilarel, Danyele Yevette; Debrie, Roger Lucien; and Loiseau, Gerard Paul Marie Henri, 3,769,409.
Decca Limited: *See—*
Millward, John David, 3,769,574.
Dechenaux, Victor Louis, to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme). Non-aqueous electrolytes. 3,769,092, Cl. 136-100.00r.
Dederra, Helmut: *See—*
Butter, Karl; Kaufmann, Michael; and Dederra, Helmut, 3,768,256.
Dee, Colin William, to Horstmann Gear Company Limited, The. Spherical bearing. 3,768,879, Cl. 308-9.000.
Deeg, Emil W.; and Martel, Leslie B., to American Optical Corporation. Toughening of ophthalmic lens blanks. 3,768,992, Cl. 65-116.000.
Deem, Charles E., Jr., to Utility Products Co. Insulating supporting roller in cathodic protection system. 3,769,190, Cl. 204-197.000.

Dehn, Frederick C., to PPG Industries, Inc. Process for the disposal of salt solutions contaiminated with azide. 3,768,865, Cl. 299-4.000.
Delacy, Thomas J., to General Dynamics Corporation. Spacecraft heat shield testing method. 3,769,511, Cl. 250-303.000.
Delany, Edward B., to Perkin-Elmer Corporation, The. Ion kinetic energy spectrometer. 3,769,513, Cl. 250-290.000.
Delaval Turbine California, Inc.: *See*—
Burtis, Wilson A., 3,768,843.
della Porta, Paolo, to S.A.E.S. Getters S.p.A. Getering. 3,768,884, Cl. 316-25.000.
Delong, William T.; Szumachowski, Edwin R.; and Heverly, Harold R. Bonded arc welding flux and liquid binding agent therefor. 3,769,099, Cl. 148-26.000.
Denholm, A. Stuart; and Simcox, Gordon K., to Energy Sciences, Inc. Method of and apparatus for producing energetic charged-particle extended-dimension beam curtains and pulse-producing structures therefor. 3,769,600, Cl. 328-233.000.
Denis, Louis Henri Daniel. Method and plant for storing and transporting a liquefied combustible gas. 3,768,271, Cl. 62-55.000.
Dentsply Research & Development Corporation: *See*—
Kroder, Ernest A., 3,768,342.
Design and Development Incorporated: *See*—
LeVesque, Charles R.; Schmieley, Donald A.; Hunstiger, Francis G.; and Brown, Arlie L., 3,768,402.
Deubel, Justin A.; and Kuhn, Edward H., to Allen-Bradley Company. Contact pressure sustaining switch. 3,769,474, Cl. 200-76.000.
Deutsch, Marshall F.: *See*—
Mead, Louis W.; and Deutsch, Marshall F., 3,768,979.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
Wagner, Hans; and Schafer, Fritz, 3,769,339.
Devor, Donald P.: *See*—
Robinson, Morton; and Devor, Donald P., 3,769,230.
Dhaka, Vir A.: *See*—
Chen, Charles Y.; Dhaka, Vir A.; and Krolikowski, Walter F., 3,769,105.
D'Hinterland, Lucien Jean Dussourd: *See*—
Fabre, Pierre Jacques Louis; and D'Hinterland, Lucien Jean Dussourd, 3,769,402.
Di Frank, Frank J.; and Vogt, Thomas E., to Owens-Illinois, Inc. Method and apparatus for individually diverting selected sheets from a corrugator bridge. 3,768,644, Cl. 209-74.00r.
Di Pietro, Joseph; and Stuetz, Dagobert E., to Celanese Corporation. Thermal stabilization of addition polymers. 3,769,262, Cl. 260-45.70s.
Diablo Systems, Incorporated: *See*—
Gabor, Andrew, 3,769,467.
Diacon, Inc.: *See*—
Rogers, Bryant C., 3,768,991.
Diaga, Valdis R., to Owens-Illinois, Inc. Gold powder. 3,768,994, Cl. 75-.50a.
Diamond International Corporation: *See*—
Keen, Everett M.; Siciliano, Anthony J.; and Keen, David A., 3,768,443.
Dian, Walter; and Golden, Gerald, to Excel Incorporated. Side reflectors for bicycles and the like. 3,768,433, Cl. 116-28.00r.
Dick, A. B., Company: *See*—
Stone, Joseph J., 3,769,627.
Dicken, John A., Jr., to General Electric Company. Flow control device. 3,768,507, Cl. 137-504.000.
Dicken, John A., Jr., to General Electric Company. Fluid control valve with improved diaphragm. 3,768,771, Cl. 251-38.000.
Dicker, George L. Football yardage measuring device. 3,768,435, Cl. 116-114.00r.
Dickson, Robert E.: *See*—
Yurko, Joseph A.; Ramachandran, Pallassana; Cheng, Bao-Ding; and Dickson, Robert E., 3,769,222.
Dietrich, Heinz J.: *See*—
Steiger, Edward L.; and Dietrich, Heinz J., 3,769,314.
Dietrich, Heinz J.; and Steiger, Edward L., to Owens-Illinois, Inc. N-(p-n-alkoxycarbonyloxybenzylidene)-p'-aminophenylacetate liquid crystal compounds. 3,769,313, Cl. 260-463.000.
Dietrich, Heinz J.; and Steiger, Edward L., to Owens-Illinois, Inc. N-(p-Alkenyloxybenzylidene)-p-aminophenylacetates. 3,769,327, Cl. 260-479.00r.
Dilay, Walter; and Zulinski, Edward J., to Ford Motor Company. Cooling apparatus for semiconductor devices. 3,768,548, Cl. 165-47.000.
Dimond, Herbert M.: *See*—
Corman, James; Walmet, Gunnar E.; Urbaetis, Stanely P.; and Dimond, Herbert M., 3,769,551.
Ditlinger, Richard J., to Bendix Corporation. Load equalized tension torsion tie bar. 3,768,334, Cl. 74-579.00r.
Diverse Ventures Corporation: *See*—
Leas, Vernon E.; and Leas, Jeffrey Alan, 3,768,701.
Divigard, Albert J., to Chandler Evans Inc. Linearized pressure gain module. 3,768,373, Cl. 91-417.000.
Dixon, Thomas P., to United Aircraft Corporation. Rotor blade construction and method. 3,768,922, Cl. 416-61.000.
Dobbs, Richard A.: *See*—
Holmes, Richard N.; and Dobbs, Richard A., 3,769,142.
Dobkowski, Raymond. Adjustable hanger for brick wall. 3,768,767, Cl. 248-226.00c.
Doemen, Benno, to Papst-Motoren KG. Contactless inverter circuit particularly to supply polyphase A-C motors from a D-C source. 3,769,569, Cl. 321-5.000.
Doering, C., & Son, Inc.: *See*—
Doering, Henry H., Jr., 3,768,228.
Doering, Henry H., Jr., to Doering, C., & Son, Inc. Butter patty printer and packaging apparatus. 3,768,228, Cl. 53-122.000.
Dogliotti, Amilcare, to Ferrero, P., & C. S.p.A. Display container. 3,768,639, Cl. 206-45.190.
Dolbachian, Raymond; and Lefevre, Claude, to U.S. Philips Corporation. Electronic control device in particular for use in a variable reluctance motor. 3,769,555, Cl. 318-138.000.
Doman, Patrick A.; and Wilkie, Ronald N., to Gam Rad, Incorporated. Stain system for membrane filters. 3,768,440, Cl. 118-503.000.
Dominion Engineering Works, Limited: *See*—
Bruinsma, Bote Gosse; and Shuffler, Eustace Cosmo, 3,768,437.
Domulewicz, Raymond J., Sr. Rotary stopper for molten metal pouring. 3,768,708, Cl. 222-557.000.
Donahue, William J.: *See*—
Czajkowski, Norman; Cammack, Thomas A.; Pickler, William C.; and Donahue, William J., 3,768,415.
Donnelley, R. R., & Sons Company: *See*—
Swanson, Kermit E., 3,768,804.
Donoughe, Clarence R. Sectional boat. 3,768,107, Cl. 9-25.000.
Dorler, Jack A.; Forneris, John L.; and Switlek, Donald J., to International Business Machines Corporation. Non-volatile storage element. 3,769,559, Cl. 317-234.00r.
Doubt, Leon S., to California Institute of Technology. Two terminal current limiter. 3,769,572, Cl. 323-4.000.
Dougherty Brothers Company: *See*—
Dougherty, Frank E., Sr., 3,768,681.
Dougherty, Frank E., Sr., to Dougherty Brothers Company. Container with safety cap. 3,768,681, Cl. 215-9.000.
Dow Chemical Company, The: *See*—
Beck, Henry N.; Ledbetter, Harvey D.; and Schmitt, John A., 3,769,269.
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Chisholm, Douglas S., 3,768,783.
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Drake, George L., Jr.: *See*—
Moreau, Jerry P.; Drake, George L., Jr.; and Reeves, Wilson A., 3,769,307.
Draper, Francis Robert, to Simms Motor Units Limited. Fuel pump actuator. 3,768,930, Cl. 417-313.000.
Drawbaugh, Donald W., to Westinghouse Electric Corporation. Vortex ring nuclear reactor. 3,768,253, Cl. 60-203.000.
Dreher, John L.: *See*—
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Dreier, William M., Jr.; and Jacobson, Donald C., to General Mills, Inc. Shelf stable, intermediate moisture, flake textured doughs and method for making same. 3,769,034, Cl. 426-151.000.
Drelich, Arthur H.; and Bowman, Boddy R., to Johnson & Johnson. Methods of controlling the migration of resin dispersions and resin binders in the manufacture of porous materials such as bonded nonwoven fabrics. 3,769,067, Cl. 117-63.000.
Dresser Industries, Inc.: *See*—
Gorgens, Joseph E.; and Heske, William A., 3,768,311.
Dreyer, Gunter: *See*—
Dziomba, Willy; Beule, Rainer; Dreyer, Gunter; and Wolf, Gerhard, 3,768,499.
Driard, Bertrand M.; Guyot, Lucien F.; and Roziere, Guy, to Thomas-CSF. X-ray and gamma-ray scintillators and to the detector screens which which incorporate same. 3,769,059, Cl. 117-33.50r.
Drico Industrial Corporation: *See*—
Hansen, Elwood F.; and Goldberg, Arnold, 3,768,642.
Driskell, Carl R., to United States of America, Navy. Color electronic synthesizer. 3,769,458, Cl. 178-5.20r.
Drydock Trailers, Inc.: *See*—
Moss, Louie W., 3,768,677.
DSO "Bulgarplod": *See*—
Kafejiev, Iliya Chudomirov; Guenchev, Lubomir Nikolov; and Klyamov, Kostadin Spirov, 3,769,439.
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Dumbaugh, William H., Jr., to Corning Glass Works. Method of depressing the liquidus temperature of lanthanum aluminogermanate glasses, and the glasses produced. 3,769,047, Cl. 106-47.00q.

Duncan, Martin D.: *See—*
Johnson, Clifford; Duncan, Martin D.; and Sannes, Laurence A., 3,768,210.

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Dunn, Daniel K. Method of coating perlite and producing materials of construction. 3,769,065, Cl. 117-54.000.

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Dunne, Samuel B. Wind spilling driver direction sign for highways. 3,768,187, Cl. 40-125.00n.

Dupree, Paul Montgomery: *See—*
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Durgarian, Sergei Garievich: *See—*
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Durose, Arthur H.; and Malak, Thomas P., to Kewanee Oil Company. Copper plating process for printed circuits. 3,769,179, Cl. 204-24.000.

Dutkewych, Oleh Borys; and Conlan, William A., Jr., to Shipley Company, Inc. Pre-etch treatment of acrylonitrile-butadiene-styrene resins for electroless plating. 3,769,061, Cl. 117-47.00a.

Dwyer, Charles James: *See—*
Mangiere, Richard John; Dwyer, Charles James; and Bressler, Magdalena Adriana, 3,769,027.

Dye, Robert C.: *See—*
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Dykehouse, David B.; Okkonew, Oliver G.; and Zoodsma, Norman J., to Rowe International, Inc. Bill and coin changer. 3,768,616, Cl. 194-4.000.

Dynamics Corporation of America: *See—*
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Dziomba, Willy; Beule, Rainer; Dreyer, Gunter; and Wolf, Gerhard, to Volkswagenwerk Aktiengesellschaft. Arrangement for the setting of the acid or alkali concentration for chemical baths having high acidity or alkalinity. 3,768,499, Cl. 137-93.000.

Dzneladze, Zhan Iosifovich: *See—*
Borok, Boris Alexandrovich; Dzneladze, Zhan Iosifovich; Petrov, Leonid Nikolaevich; Zaikin, Evgeny Ivanovich; Kiyansky, Ivan Alexeevich; and Lobashov, Boris Pavlovich, 3,769,008.

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Nikawitz, Edward J.; Tavares, Robert F.; and Easter, William M., Jr., 3,769,330.

Easter, William M., Jr.; and Tavares, Robert F., to Givaudan Corporation. Cyclic acetals of 2,4-hexadienal. 3,769,303, Cl. 260-338.000.

Eastern Refractories Co., Inc.: *See—*
Vossler, Richard G.; and Brock, William E., 3,768,626.

Eastman Kodak Company: *See—*
Brown, Jesse L.; and Hotter, Lynn R., 3,769,206.
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Eaton Corporation: *See—*
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Eaton Yale & Towne, Inc.: *See—*
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Eberle, Dieter; Hanselmann, Dieter; and Prohaska, Hans, to SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH. Switch device for indicating presence of a load on the seat of an automotive vehicle. 3,769,476, Cl. 200-85.00a.

Eberspacher, J.: *See—*
Gerwin, Reinhard, 3,768,920.

Echerd, James W.; and Watters, Warren K., to Porter, H. K., Company, Inc. Pipe lagging material and process for making same. 3,769,072, Cl. 117-126.0af.

Echo Science Corporation: *See—*
Salcedo, Guido, 3,768,717.

Eckert, Herbert L., to Harnischfeger Corporation. Means for connecting hydraulic cylinder to movable component. 3,768,322, Cl. 74-102.000.

Eckman, Mervyn H. Vial device. 3,768,685, Cl. 215-100.00r.

Economation, Inc.: *See—*
Bennett, Harry L.; and Stockton, Richard E., 3,768,629.

Economy, James; and Lin, Ruey Y., to Carborundum Company, The. Quilted fabric containing high surface area carbon fibers. 3,769,144, Cl. 161-50.000.

Edagawa, Hiroshi: *See—*
Tabata, Masaaki; Susami, Kozo; and Edagawa, Hiroshi, 3,768,246.

Edwards, Evan A.; Sutliff, Robert C.; and Tucker, Archie J., to Eastman Kodak Company. Cartridge takeup core and core-mounting system. 3,768,747, Cl. 242-71.200.

Egan, Clark J.: *See—*
White, Robert J.; and Egan, Clark J., 3,769,235.

Eggers, William H. All purpose carrier. 3,768,710, Cl. 224-48.00a.

Eggert, Harold A., to Illinois Tool Works, Inc. Needle carrier. 3,768,635, Cl. 206-17.000.

Eickmann, Karl. Fluid-borne vehicle. 3,768,757, Cl. 244-17.230.

Eiler, Peter; and Weiskopf, Hans, to Gottewald, Leo, K.G. Travelling crane. 3,768,665, Cl. 212-38.000.

Eisenlohr, Gerald M.: *See—*
Barnes, Vernon M., Jr.; and Eisenlohr, Gerald M., 3,768,255.

Electrostatic Equipment Co.: *See—*
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Elitex, Zavody textilniko strojirenstvi: *See—*
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Elkins, Perry E.; and Austerman, Stanley B., to North American Rockwell Corporation. Single crystal beryllium oxide growth from calcium oxide-beryllium oxide melts. 3,768,983, Cl. 23-301.0sp.

Elkuch, Franz, to Etablissement Procor. Electrostatic system for generating periodical mechanical vibrations. 3,769,531, Cl. 310-6.000.

Elliot, Raymond William: *See—*
Upton, Keith Allan; and Elliot, Raymond William, 3,768,840.

Elliott, Phillip Mitchell. Drawing instruments. 3,768,166, Cl. 33-27.00b.

Elson, Edward E.; and Lane, Bert, to Automatic Helium Balloon Systems, Inc. Inflatable article valve. 3,768,501, Cl. 137-231.000.

Ely, John W.; Chatterji, Jiten; Holtmyer, Marlin D.; and Tinsley, John M., to Halliburton Company. Methods for fracturing high temperature well formations. 3,768,566, Cl. 166-308.000.

Emco Wheaton U.K. Limited: *See—*
Upton, Keith Allan; and Elliot, Raymond William, 3,768,840.

Emery Industries, Inc.: *See—*
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Emery, Vern, Company, Inc.: *See—*
Howe, Charles Wesley, 3,768,365.

Emmons, Robert J.; and Boissonneault, Maurice L., to Dynamics Corporation of America. Can opener cutter assembly release. 3,768,159, Cl. 30-4.00r.

Empresa Nacional de Optica, S.A.: *See—*
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Enercon International, Limited: *See—*
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Pennachetti, John T.; and Boux, Joseph F., 3,769,054.

Energy Sciences, Inc.: *See—*
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Engel, William K.; Van Gaasbeek, Peter H.; Norick, William B.; and St. Germain, James L., to Caterpillar Tractor Company. Hydrostatic button bearings for pumps and motors. 3,768,377, Cl. 91-486.000.

Engel, Wolfhard: *See—*
Landgraf, Claus-Adolf; Seeger, Ernst; Engel, Wolfhard; Teufel, Helmut; and Machleidt, Hans, 3,769,299.

Engelhard Minerals and Chemicals Corporation: *See—*
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Engelhorn, Robert: *See—*
Kruger, Gerd; Zipp, Otmar; Keck, Johannes; Nickl, Josef; Machleidt, Hans; Ohnacker, Gerhard; Engelhorn, Robert; and Puschmann, Sigfrid, 3,769,408.

Enoki, Kichiji: *See—*
Yamagami, Kisaburo; Enoki, Kichiji; Tani, Toshiyuki; Akimoto, Shiro; Futakuchi, Jiro; and Tayagaki, Hajimo, 3,769,322.

Entreprise de Recherches et d'Activites Petrolieres (Elf): *See—*
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Envir-O-Tab, Inc.: *See—*
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Erickson, Kent E., to Keuffel & Esser Company. Electro-optical incremental motion and position indicator. 3,768,911, Cl. 356-169.000.

Escher Wyss Aktiengesellschaft: *See—*
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Espe, Roy H., to Motorola, Inc. Squench circuit with time delay variable in accordance with strength of received signal. 3,769,592, Cl. 325-478.000.

Espeset, Paul A.: *See—*
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Espinosa, Rene Jose. Method for preparing measured lengths of dental floss. 3,769,396, Cl. 264-157.000.

Esso Production Company: *See—*
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Valdo, Alex R.; and Berry, Currie B., 3,769,001.
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Ettischer, Helmut; Ort, Wolfgang; Simon, Horst; and Steisslinger, Kurt, to Eastman Kodak Company. Transport metering and shutter cocking mechanism for cameras. 3,768,389, Cl. 95-31.0ac.

Eubanks, Lloyd S.; McMahon, Krouse S.; Payne, John T.; and Rosenberger, Frederick E. Purification of carboxylic acid by plural stage distillation with side stream draw-offs. 3,769,177, Cl. 203-71.000.

Ex-Cell-O Corporation: *See—*
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Fabre, Pierre Jacques Louis; and D'Hinterland, Lucien Jean Dussourd, to Investigations Scientifiques Pharmaceutiques. Preparation of a hormonal duodenum extract. 3,769,402, Cl. 424-104.000.

Factor, Arnold, to General Electric Company. Color-stabilized polycarbonate composition. 3,769,367, Cl. 260-860.000.

Falk, Edward J.: *See—*
Boeler, Richard C.; and Falk, Edward J., 3,768,869.

Falk, Edward J., to Wagner Electric Corporation. Disc brake and friction member structure. 3,768,604, Cl. 188-73.300.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
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Farber, Milton; Bush, Albert F.; and Wiens, Franklin J., to Republic Corporation, mesne. Solvent recovery system. 3,768,232, Cl. 55-58.000.

Farbwerke Hoechst Aktiengesellschaft: *See—*
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Farmer, Earl T.; and Keith, Garland B. Apparatus for cutting tow into staple fiber. 3,768,355, Cl. 83-403.000.

Farris, Joseph P.: *See—*
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Federal-Mogul Corporation: *See—*
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Feichtinger, Reinrich. Arrangement for determining the thermal conductivity of gases. 3,768,301, Cl. 73-27.00r.

Feldcamp, Edward George. Manufacture of extrusion tools. 3,768,344, Cl. 76-107.00r.

Feldman, David; Lesh, Nathan George; and Worobey, Walter, to Bell Telephone Laboratories, Incorporated. Manufacture of beam-crossovers for integrated circuits. 3,769,108, Cl. 156-3.000.

Feldman, Irving B. Magnetic actuated switch apparatus including shunt. 3,769,556, Cl. 317-148.50b.

Fenje, Paul, to Connaught Laboratories, Limited, mesne. Method of preparing a killed vaccine for oral use. 3,769,415, Cl. 424-89.000.

Fenton, Donald M., to Union Oil Company of California. Oxidation of alpha aryl alcohols. 3,769,325, Cl. 260-476.00r.

Ferrero, P., & C. S.p.A.: *See—*
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Ferrier, Noel Henri, to Societe d'Etudes et de Realisations Electroniques. Device for measuring the position of a receding moving object in relation to a reference system. 3,768,909, Cl. 356-138.000.

Fertik, Ira J.; Huck, Charles M.; and Ashley, Charles R., to Vernitron Medical Products, Inc. Aspiration device for body fluids. 3,768,478, Cl. 128-276.000.

Fessenden, Frank J. Cleat structure. 3,768,183, Cl. 36-67.00r.

Fessler, William A.; and Wroblewski, Henry A., to General Electric Company. Polyesterimides from caprolactam-trimellitic anhydride reaction products dissolved in unsaturated monomers. 3,769,366, Cl. 260-857.0pa.

Fields, Irvin L. Toy airplane of foldable sheet material and lunching means for and method of making same. 3,768,198, Cl. 46-73.000.

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Pechko, Mikhail Alexeevich; Ivnitsky, Boris Yakovlevich; Blagov, Eduard Evenievich; Filatov, Ivan Grigorievich; Ustinov, Evgeny Ivanovich; Rozhkov, Sergei Iosifovich; Belov, Viktor Konstantinovich; and Gruzdev, Nikolai Viktorovich, 3,768,305.

Fink, James K., to Fruit Growers Express Company. System for controlling cooling and heating of a loading space. 3,768,274, Cl. 62-159.000.

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Firestone Tire and Rubber Company, The: *See—*
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Fischer & Porter Company: *See—*
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Fishpaw, Bernice N., to Lee, Raymond, Organization, Inc., The. Combination surgical instrument table and sterilizer basket. 3,768,971, Cl. 21-83.000.

Fitzgerald, Gordon E.: *See—*
Fitzgerald, Gordon E.; and Wehner, Norvin J. (said Wehner assor. to said), 3,768,106.

Fitzgerald, Gordon E.; and Wehner, Norvin J., said Wehner assor. to said Fitzgerald, Gordon E. Bed. 3,768,106, Cl. 5-131.000.

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Cook, Richard Erwin; Fitzhugh, Donald Lewis; and Luckey, George Wilson, 3,769,397.

Fitzpatrick, James W. Chain saw sharpening device. 3,768,341, Cl. 76-31.00r.

Flaschar, Heinz; and Schneider, Klaus, to Bosch, Robert, G.m.b.H. Control apparatus for a hydraulic consumer motor. 3,768,375, Cl. 91-459.000.

Fleckenstein, Andrew J. Regeneration sensing system. 3,768,649, Cl. 210-96.000.

Fleischer, Manfred, to International Standard Electric Corporation. Printing mechanism for serial data recording. 3,768,621, Cl. 197-18.000.

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Flis, Richard J.: *See—*
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FMC Corporation: *See—*
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Folkins, Hillis O., to Union Oil Company of California. Method of producing high purity coke by delayed coking. 3,769,200, Cl. 208-53.000.

Forber, Malcolm R.: *See—*
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Forstmann, Julius V. D.; and Willison, Richard M., to Bethlehem Steel Corporation. Formation of chromium-containing coatings on steel strip. 3,768,987, Cl. 29-196.100.
Forte, Frank N. Safety device for an extension ladder and method of mounting. 3,768,123, Cl. 24-73.0cs.
Foss, Richard C.; and Spittle, Walter, to Microsystems International Limited. Bi-directional amplifying bus-switch. 3,769,525, Cl. 307-254.000.
Foster, James L., Jr., to Buell, Eugene F. Welding rods. 3,768,984, Cl. 29-182.800.
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Francis, James H.; and Horcher, Linus H., to Monsanto Company. Preparation of pentachlorophenol. 3,769,353, Cl. 260-623.00h.
Frank, Ulrich Anton, to Hoffmann-La Roche Inc. Urine liquid discharge monitor. 3,769,497, Cl. 235-92.0fl.
Franklin, Borton P.; and Wang, Kenneth Y., to Burlington Industries, Inc. Dye package unloader. 3,768,680, Cl. 214-652.000.
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Fredrickson, David L. Expandable shaft apparatus. 3,768,749, Cl. 242-72.000.
Fredrickson, Sherman E.: *See—*
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Freedman, James F.; Henry, George R.; Mayadas, Ashok F.; and Shatzkes, Morris, to International Business Machines Corporation. Thin film low temperature conductors and transmission lines. 3,769,618, Cl. 333-84.00m.
Freeman, Alan John Morris, to Stansted Engineering Limited. Fluid pumping apparatus. 3,768,927, Cl. 417-38.000.
Freeman, Ralph Capron. Debris collection device. 3,768,851, Cl. 294-55.000.
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Frosst, Charles E., & Co.: *See—*
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Fujii, Tuneo; and Suzue, Seisuke, to Daikin Kogyo Co., Ltd. Process for preparing a fluorocarbon polymer anhydrous organosol. 3,769,252, Cl. 260-32.80r.
Fujimoto, Sakae, to Ricoh Co., Ltd. Toner supply means for electrostatic reproducing machine. 3,768,702, Cl. 222-167.000.
Fujino, Ichizo: *See—*
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Fuller, Walter Thomas, to Marcor Housing Systems Incorporated. Electrical system for dwelling units. 3,768,221, Cl. 52-221.000.
Fulmer, Keith H., to Bendix Corporation, The. Hydraulic spring brake control system. 3,768,608, Cl. 188-17.0er.
Fushiki, Isamu: *See—*
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Ganz, Alexander J., to Hercules Incorporated. Method of making a thermoplastic food product. 3,769,029, Cl. 99-17.000.
Garber, Daniel C., to Sun Shipbuilding & Dry Dock Company. Fabrication of heat exchanger tube bundles. 3,768,132, Cl. 29-157.03r.
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Garman, James A., to Caterpillar Tractor Company. Torsion bar recoil and adjuster mechanism. 3,768,878, Cl. 305-31.000.
Garner, Philip O., to Litton Industries, Inc. Energy absorbing spring device. 3,768,794, Cl. 267-74.000.
Garnett, Donald W., to Mahogany Farms, Inc., mesne. Method for blending and portioning meat and other food products. 3,769,036, Cl. 426-231.000.
Garnier, Michael F.; and Nelson, Roland D., to International Business Machines Corporation. Trim erase mend assembly for providing a uniform erase field. 3,769,469, Cl. 179-100.20d.
Garren, Leeroy L., to Lee-Tex Valve, Inc. Automatic test valve for testing pressure relief valves. 3,768,299, Cl. 73-4.00r.
Garretson, George W. Tool for tensioning elongated tension member. 3,768,779, Cl. 254-51.000.
Garzia, Aldo, to Istituto Chemioterapico Italiano S.p.A. Derivatives of amino dialkanoic acids. 3,769,334, Cl. 260-519.000.
Garzia, Aldo, to Instituto Chemioterapico Italiano S.p.A. Derivatives of aminoalkanoic acids. 3,769,335, Cl. 260-519.000.
Gassner, Hans, to Schafer, Kugelfischer Georg, & Co. Friction roller for driving high-speed spinning or twisting tube. 3,768,129, Cl. 29-110.000.
Gauthier, Joseph, Jr. Environmental collection box. 3,768,689, Cl. 220-24.00a.
Gawura, Andrew, 1/2 to Lawrence, A. Robert. Gastric cooling apparatus. 3,768,484, Cl. 128-400.000.
Gazzani, Renato. Rapid-release escapement for timing programmers. 3,768,318, Cl. 74-3.520.
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Gedde, Ove Christopher. Process for electrolytically coloring previously inodized aluminum using alternating current. 3,769,180, Cl. 204-35.00n.
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George, Paul J., to Goodrich, B. F., Company, The. Shortstopping free radical polymerization of vinylidene monomers. 3,769,268, Cl. 260-89.50a.
George, Robert. Apparatus for fragmenting scrap metal. 3,768,739, Cl. 241-65.000.
George, Robert J. Aerial toy. 3,768,762, Cl. 244-155.00r.
Georgiev, Anatoly Konstantinovich; and Goldfarb, Veniamin Iosifovich. Orthogonal skew-axis gearing. 3,768,326, Cl. 74-425.000.
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Gilman, Paul B.; and Heseltine, Donald W., to Eastman Kodak Company. Photoconductive compositions and elements containing methine dye in J-aggregate state. 3,769,011, Cl. 96-1.600.
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Glassman, Stanley H. Educational arithmetic toy with interchangeable numerals. 3,768,178, Cl. 35-31.00g.
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Glenn, Robert G., to Westinghouse Electric Corporation. Manifold thermal reactor. 3,768,260, Cl. 60-324.000.
Glomski, Ronald L.; Davis, Lewis E.; and Grover, Joseph A., to Dow Chemical Company, The. Cellulose ether thickener for latex paint. 3,769,247, Cl. 260-143.000.
Goda, George G. Liquid check valve assembly. 3,768,509, Cl. 137-539.000.
Godin, Jacques J.; and Stephan, Jacques A., to Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Method for levelling the decks of ships. 3,769,102, Cl. 148-130.000.
Goehring, Clifford Clayton: *See*—
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Goetzinger, Nicholas J.; and Silvernail, Walter. Process for the preparation of a rare earth oxide polishing composition. 3,768,989, Cl. 51-309.000.
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Goldberg, Daniel E., to Waterfun, Inc. Skate sail. 3,768,823, Cl. 280-11.37s.
Goldberg, Morris I. Two-position child's seating system. 3,768,861, Cl. 297-253.000.
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Goldfarb, Adolph E. Ball passing toy. 3,768,199, Cl. 46-119.000.
Goldfarb, Adolph E.; and Soriano, Rene, to Goldfarb, Adolph E. Game board for play of collision game. 3,768,810, Cl. 273-120.00r.
Goldfarb, Adolph E.; and Goldfarb, Anita J. Trap board game apparatus. 3,768,811, Cl. 273-131.00b.
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Goldsworthy, William B.; and Hardesty, Ethridge E., to Goldsworthy Engineering, Inc. Method and apparatus for producing filament reinforced tubular products on a continuous basis. 3,769,127, Cl. 156-172.000.
Gomes, John M.; and Uchida, Kenji, to United States of America, Interior. Electrolytic preparation of zirconium and hafnium diborides using a molten, cryolite-base electrolyte. 3,769,185, Cl. 204-71.000.
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Goodman, Daniel J. Current monitoring system for electric arc furnace conductors. 3,769,440, Cl. 13-12.000.
Goodrich, B. F., Company, The: *See*—
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Gordon, Richard O.; deceased (by Gordon, Lillian H.; executrix), to Harnischfeger Corporation. Control system for hoist testing apparatus. 3,768,261, Cl. 60-328.000.

Gorgens, Joseph E.; and Heske, William A., to Dresser Industries, Inc. Motion responsive electrical control apparatus. 3,768,311, Cl. 73-398.0ar.

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Gorger, Peter, to AEG-Elotherm GmbH. Method of electrochemically deburring metal workpieces and apparatus for performing the same. 3,769,192, Cl. 204-201.000.

Goto, Kazuhiro, to GSW Appliances Limited. Valve structure. 3,768,514, Cl. 137-609.000.

Gottewald, Leo, K.G.: *See—*
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Gould, Douglas Eugene; Anderson, Lowell Ray; and Fox, William Burke, to Allied Chemical Corporation. Process for the preparation of polyhaloorgano hypochlorites. 3,769,312, Cl. 260-453.00r.

Goulder Mikron Limited: *See—*
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Goward, Stanley Harold; and Gooddard, Michael Robert, to BTR Industries Limited. End fittings. 3,768,844, Cl. 285-137.00r.

Gower, Roger L. Vehicle tire protection assembly. 3,768,533, Cl. 152-239.000.

Gower, Roger L. Self-aligning traction assembly for vehicles. 3,768,534, Cl. 152-239.000.

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Grabb, Frederick G.; Cripe, Maxwell L.; and Gardner, Delbert J., to Bendix Corporation, The. Selective pressure differential reinforcing means. 3,768,366, Cl. 91-1.000.

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Graham, Philip G.; and Reich, Lawrence, to Lorbon Manufacturing Co., Inc. Electronic long-distance telephone call computer and recorder. 3,769,463, Cl. 179-7.1tp.

Graham, Robert H.; and Wilson, John R., to Pearson, R. A., Company. Cover applicator for bottles. 3,768,136, Cl. 29-208.00b.

Gramling, Wesley A. Nozzle apparatus for cementious material. 3,768,939, Cl. 425-87.000.

Gramse, Harold E., to Pullman Incorporated. Container bracket arrangement for railway car. 3,768,421, Cl. 105-366.00d.

Grannen, Edward A., to Occidental Petroleum Corporation. Flotation of siliceous materials with diamine reaction products. 3,768,646, Cl. 209-166.000.

Grant, Norman H.; and Alburn, Harvey E., to American Home Products Corporation. Method of reducing serum cholesterol with 2-phenoxyalkanoic acid esters. 3,769,431, Cl. 424-308.000.

Graulich, Wilhelm; Beck, Manfred; Marwede, Gunter; and Theisen, Dieter, to Bayer Aktiengesellschaft. Mixtures of polyisoprene rubber and polypentenamer. 3,769,369, Cl. 260-887.000.

Great Lakes Orthodontic Laboratory Inc.: *See—*
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Green, Lawrence R., to Ford Motor Company. Tractor hydraulic lift system. 3,768,570, Cl. 172-9.000.

Greenfield, Stanley A.: *See—*
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Greenlee, Thomas W., to Dow Corning Corporation. Method of adhering silicone rubber to metal surfaces using glycine or dimethylformamide. 3,769,064, Cl. 117-49.000.

Greer, Richard R. Watercraft. 3,768,429, Cl. 114-43.500.

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Gregory, Francis Xavier. Adjustable bed. 3,768,105, Cl. 5-2.000.

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Greissing, Hans, to Static-S.p.A. Apparatus for cervical traction. 3,768,464, Cl. 128-75.000.

Grenot, Michel; and Pergrale, Jean, to U.S. Philips Corporation. Optic relay comprising a photoconductor element. 3,769,512, Cl. 250-225.000.

Gresham, James T.; and Juracek, Louis J., Jr., to Kimberly-Clark Corporation. Reinforced plastic cushioning material. 3,769,145, Cl. 161-68.000.

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Grey, Michael W., to Addmaster Corporation. Check locating means for checkwriters. 3,768,405, Cl. 101-407.000.

Grgurich, William A.; and Swanson, Morris A., to Caterpillar Tractor Company. Exhaust manifolding. 3,768,248, Cl. 60-13.000.

Gridley, Porter F.; Brennan, James J., Jr.; Williams, Frank R.; and Hagopian, Erivan, to Cabot Corporation. Preparation of solution polymer masterbatches. 3,769,257, Cl. 260-41.5mp.

Grimes, Raymond E.; and Bruen, Robert W., to Baxter Laboratories, Inc. Microbiological streaking method. 3,769,171, Cl. 195-103.50r.

Grimm, Oskar; and Vorgrimler, Ludwig, to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft. Gun construction for sealing between a gun barrel and a cartridge holder. 3,768,362, Cl. 89-26.000.

Grisell, Richard T. Method of dissipating static electricity in packaging. 3,768,227, Cl. 53-36.000.

Griswold, Frederick Bethel, to RCA Corporation. Analog phase tracker. 3,769,602, Cl. 329-122.000.

Grogler, Gerhard; Kallert, Wilhelm; and Meisert, Ernst, to Bayer Aktiengesellschaft. Polyurethanes based on tertiary alcohol-modified naphthylene-1,5-diisocyanate. 3,769,265, Cl. 260-75.0nt.

Grooss, Frank A., to Caterpillar Tractor Company. Replaceable truck body and method for using same. 3,768,672, Cl. 214-82.000.

Gross, James Edward: *See—*
Brown, Paul Merrill; Davis, Donovan Chester; Gross, James Edward; and Sweet, Richard Gordon, 3,769,591.

Grossman, Abraham. Sliding panel decorative frame, handle, and latch means combination. 3,768,205, Cl. 49-450.000.

Grossman, David O.: *See—*
Bahl, Lalit R.; Barnea, Daniel I.; Grossman, David O.; and Kobayashi, Hisashi, 3,769,453.

Groszek, Aleksander Jerzy; and Nicholas, Douglas Keith, to British Petroleum Company, The. Process for separating waxy hydrocarbons. 3,769,199, Cl. 208-28.000.

Grover, Joseph A.: *See—*
Glomski, Ronald L.; Davis, Lewis E.; and Grover, Joseph A., 3,769,247.

Grubb, John J.; and Tomei, Keichi, to Hamilton Company. Disposable pipette. 3,768,978, Cl. 23-259.000.

Gruber, William P.: *See—*
Bell, Lon E.; and Gruber, William P., 3,769,472.

Gruenke, Bernard L., Jr., to Conrad Schmitt Studios, Inc. Method of etching glass. 3,769,113, Cl. 156-24.000.

Gruppo Lepetit S.p.A.: *See—*
Omodei-Sale, Amedeo; and Consonni, Pietro, 3,769,282.

Gruzdev, Nikolai Viktorovich: *See—*
Pechko, Mikhail Alexeevich; Ivnitsky, Boris Yakovlevich; Blagov, Eduard Evenievich; Filatov, Ivan Grigorievich; Ustinov, Evgeny Ivanovich; Rozhkov, Sergei Iosifovich; Belov, Viktor Konstantinovich; and Gruzdev, Nikolai Viktorovich, 3,768,305.

GS Equipment Company: *See—*
Gill, Thomas R., 3,769,193.

GSW Appliances Limited: *See—*
Goto, Kazuhiro, 3,768,514.

GTE Automatic Electric Laboratories, Incorporated: *See—*
Stepan, William E., 3,768,351.

GTE Sylvania, Incorporated: *See—*
Lagermasini, Joseph P.; and Warner, Leadom A., 3,769,111.
McDonough, Thomas B., 3,769,501.

Gueldenpfennig, Klaus: *See—*
Russell, Stanley L.; Gueldenpfennig, Klaus; and Pommerening, Uwe A., 3,769,462.

Guenchev, Lubomir Nikolov: *See—*
Kafejiev, Iliya Chudomirov; Guenchev, Lubomir Nikolov; and Klyamov, Kostadin Spirov, 3,769,439.

Guha, Prodyot: *See—*
Richardson, William Henry; Brown, Douglas; and Guha, Prodyot, 3,769,005.

Guillette, Robert A.: *See—*
Berkovits, Barouh V.; and Guillette, Robert A., 3,768,486.

Gulf & Western Industries, Inc.: *See—*
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Gulf Research & Development Company: *See—*
Bacha, John D.; and Selwitz, Charles M., 3,769,355.
Bacha, John D.; and Selwitz, Charles M., 3,769,356.
Bacha, John D.; and Selwitz, Charles M., 3,769,357.
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Harper, Earl F.; and Williamson, Roger C., 3,769,360.
Ondrey, John A.; and Swift, Harold E., 3,769,237.

Gulton Industries, Inc.: *See—*
Seiger, Harvey N.; and Ritterman, Paul F., 3,769,088.

Gunn, John B., to International Business Machines Corporation. Traveling wave actuated segmented charging electrode for an ink jet printer. 3,769,625, Cl. 346-1.000.

Gutehoffnungshuette Sterkrade A.G.: *See—*
Schwerdtfeger, Gunter; and Kammerling, Bruno, 3,768,791.

Gutknecht, Heinrich, to N.V. Veluwse Machine Industrie. Apparatus for stacking a sheet-like flexible material. 3,768,800, Cl. 270-30.000.

Gutman, Arnold, to Stauffer Chemical Company. Insecticidal use of phosphorus containing oxime carbamates. 3,769,419, Cl. 424-211.000.

Gutman, Arnold D., to Stauffer Chemical Company. Oximino phosphorus compounds. 3,769,375, Cl. 260-944.000.

Gutsche, Rolf; Hanske, Manfred; and Lungwitz, Gunter, to VEB Polygraph Leipzig Druckmaschinenwerk Planeta Radebeul. Sheet gripper. 3,768,406, Cl. 101-409.000.

Guyon, Roger: *See—*
Tariel, Henri; Guyon, Roger; Gagneux, Yves; Muller, Franck; and Louis, Yves, 3,769,118.

Guyot, Lucien F.: *See—*
Driard, Bertrand M.; Guyot, Lucien F.; and Roziere, Guy, 3,769,059.

Guzy, Darrel James: *See—*
Applequist, James E.; Johnson, James E.; Akers, Clifford B.; Daniels, Donald V.; James, Richard N.; Roberts, Daniel M.; and Guzy, Darrel James, 3,768,714.

Gygli, Walter; and Hanni, Eduard, to Hammerle AG. Press having means to prevent skewing movement of the ram. 3,768,400, Cl. 100-258.00r.

Haag, Arthur P.; and Weiner, Meyer, to Dart Industries, Inc. Process for producing activated titanium trichloride-aluminum trichloride. 3,769,234, Cl. 252-442.000.

Haas, Roger E.: *See—*
Ramos, Richard; and Haas, Roger E., 3,768,986.

Hackenberg, Hubert; Putscher, Johann; and Spinnler, Rainer, to Agfa-Gevaert Aktiengesellschaft. Photographic apparatus with deformable release means. 3,768,388, Cl. 95-31.00r.

Haga, Hisashi; and Takamatsu, Yukio, to Toyo Rubber Industry Company Ltd. Apparatus for continuously producing a synthetic polymer foamed mass having square cross section. 3,768,937, Cl. 425-4.000.

Hage, William T., to Mechtron International Corporation. Apparatus and method for the pyrolysis of solid waste material. 3,768,424, Cl. 110-8.00r.

Hagerman, Larry Melvin; and Schneider, Donald Louis. Intestinal bile acid binding process and compositions. 3,769,399, Cl. 424-79.000.

Haggerty, William Andrew, to Cincinnati Milacron Inc. Apparatus and method for forming grooves and lands. 3,769,194, Cl. 204-224.000.

Hagopian, Erivan: *See—*
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Halasa, Adel F.: *See—*
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Halasz, Egon F.: *See—*
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Halberschmidt, Friedrich; Linberg, Karl Heinz; Nuding, Werner; and Steffens, Hans, to Saint-Cobain. Method for manufacture of laminated sheet material. 3,769,133, Cl. 156-286.000.

Haldor Frederik Axel Topsoe: *See—*
Andersen, Per Heymann, 3,768,980.

Hale, James C.; and Herrick, Edward P., to Autometrics Co., mesne. Method and apparatus for the removal of entrained gases from mineral slurries, pulps, liquids, and the like. 3,768,726, Cl. 233-16.000.

Halik, Joseph J.: *See—*
Kaplow, Milton; and Halik, Joseph J., 3,769,042.

Halliburton Company: *See—*
Baker, Eugene E., 3,768,556.
Baker, Eugene E., 3,768,562.
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Howard, Paul D., 3,768,419.
Hyde, Walter E., 3,768,304.
Knox, John A.; and Fredrickson, Sherman E., 3,768,564.

Hallmark, Bobby J., to Gearhart-Owen Industries, Inc. Selective firing apparatus. 3,768,408, Cl. 102-21.600.

Haltom City State Bank: *See—*
Campbell, James W., 3,768,352.

Halton City State Bank, mesne: *See—*
Campbell, James W., 3,768,796.

Hamamoto, Kazuko: *See—*
Hara, Takeshi; Niida, Taro; Satoh, Kimio; Kondo, Shinichi; Akita, Eiichi; Sezaki, Masaji; Shimura, Masaru; Nishio, Takako; Hamamoto, Kazuko; and Koike, Makiko, 3,769,403.

Hamb, Frederick L.: *See—*
Wilson, John C.; and Hamb, Frederick L., 3,769,264.

Hamblin, Peter Collen; and Pennycook, James, to Esso Research and Engineering Company. Lubricating oil compositions. 3,769,211, Cl. 252-32.70e.

Hamilton, Billy Harold; Kunzinger, Frederick Francis; and Schroeder, Robert Edward, to Bell Telephone Laboratories, Incorporated. DC-to-DC converter having soft start and other regulation features employing priority of pulse feedback. 3,769,568, Cl. 321-2.00.

Hamilton Company: *See—*
Grubb, John J.; and Tomei, Keichi, 3,768,978.

Hammerle AG: *See—*
Gygli, Walter; and Hanni, Eduard, 3,768,400.

Hampton, Flournoy W. Hydraulic buffer device. 3,768,793, Cl. 267-8.000.

Hanada, Hiroshi; Kitajima, Nobuo; and Masaki, Tatsuo, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member. 3,769,010, Cl. 96-1.500.

Hannerz, Kare, to AB Asea-Atom. Emergency cooling of a gas-cooled nuclear reactor. 3,769,157, Cl. 176-38.000.

Hanni, Eduard: *See—*
Gygli, Walter; and Hanni, Eduard, 3,768,400.

Hanselmann, Dieter: *See—*
Eberle, Dieter; Hanselmann, Dieter; and Prohaska, Hans, 3,769,476.

Hansen, Albert L.: *See—*
Hansen, Jep F.; and Hansen, Albert L., 3,768,456.

Hansen, Elwood F.; and Goldberg, Arnold, to Drico Industrial Corporation. Shipping and dispensing carton. 3,768,642, Cl. 206-56.00r.

Hansen, Jep F.; and Hansen, Albert L. Bow string release. 3,768,456, Cl. 124-35.00a.

Hanske, Manfred: *See—*
Gutsche, Rolf; Hanske, Manfred; and Lungwitz, Gunter, 3,768,406.

Hanson, Ivor G. Process for recycling steel bodymaker punch sleeves. 3,768,287, Cl. 72-56.000.

Hara, Akira: *See—*
Sakai, Masatada; Hara, Akira; Nomaguchi, Tamotsu; Ishida, Akio; and Fujiwara, Michio, 3,768,958.

Hara, Iwau: *See—*
Hino, Masamichi; and Hara, Iwau, 3,769,498.

Hara, Takeshi; Niida, Taro; Satoh, Kimio; Kondo, Shinichi; Akita, Eiichi; Sezaki, Masaji; Shimura, Masaru; Nishio, Takako; Hamamoto, Kazuko; and Koike, Makiko. Ericamycin and production thereof. 3,769,403, Cl. 424-122.000.

Harbolt, Bruce A.: *See—*
Young, Donald C.; and Harbolt, Bruce A., 3,769,378.

Hardesty, Ethridge E.: *See—*
Goldsworthy, William B.; and Hardesty, Ethridge E., 3,769,127.

Hardin, George E. Set retarder and air-entrainer composition for mortar. 3,769,051, Cl. 106-90.000.

Hardison, Leslie C., to Universal Oil Products Company. Venturi scrubber system including control of liquid flow responsive to gas flow rate. 3,768,234, Cl. 55-223.000.

Hargreaves, James Roger; Jeffrey, Raymond; and Hickmott, Peter William, to Ciba-Geigy Corporation. 2,4-Disubstituted 3-aminocyclohexenones. 3,769,284, Cl. 260-247.70k.

Harney, Ralph, to Oak Electro/Netics Corporation. Cable television monitoring system. 3,769,579, Cl. 325-31.000.

Harnischfeger Corporation: *See—*
Eckert, Herbert L., 3,768,322.
Gordon, Richard O., 3,768,261.

Harper, Earl F.; and Williamson, Roger C., to Gulf Research & Development Company. Process for transalkylating diethyl benzene. 3,769,360, Cl. 260-672.00t.

Harris, Gabriel W.: *See—*
Bannister, Ralph R.; Harris, Gabriel W.; and Boston, Joseph F., 3,769,217.

Harris, Lawson P., to General Electric Company. Vacuum arc devices with ferrous electrodes. 3,769,538, Cl. 313-233.000.

Harrison, Robert S., to Ford Motor Company. Automatic idle speed controller. 3,768,450, Cl. 123-103.000.

Hart, John Michael, to Fischer & Porter Company. Plastic-encapsulated variable-area flowmeter. 3,768,309, Cl. 73-209.000.

Hasegawa, Goro, to Canon Kabushiki Kaisha. Photographic camera having an electric timer device. 3,768,387, Cl. 95-11.00r.

Hasegawa, Hiroyoshi: *See—*
Ida, Shunya; Hosokawa, Kenjiro; Hasegawa, Hiroyoshi; Nakanishi, Seinosuke; Kajino, Katsura; and Ueda, Keizo, 3,769,060.

Hasegawa, Norio: *See—*
Asahi, Tetsuma; Hasegawa, Norio; and Hozumi, Kaoru, 3,768,623.

Hashimoto, Sei; Nakatani, Keizo; Suzuki, Shoji; Daigo, Hiroshi; and Fujino, Ichizo, to San-Abbott Limited. Polyurethane foam reaction catalyzed by salts of 1,8-diaza-bicyclo(5,4,0)-undecene-7. 3,769,244, Cl. 260-2.5ac.

Hass, David P., to Eaton Corporation. Vehicle knee bag. 3,768,830, Cl. 280-150.0ab.

Hasslinger, Robert L., to Hughes Aircraft Company. Workload allocation for one or more tools. 3,769,488, Cl. 219-121.01m.

Haugen, John M.; and Jones, Herman L. Film strip splicing device. 3,769,141, Cl. 156-504.000.

Hauschopp, Alois; Steinkuhl, Bernd; Breuer, Oswald; and Ostrop, Berthold, to Gewerkeschaft Eisenhutte Westfalia. Replaceable friction members for sword plate guides in mining installation. 3,768,866, Cl. 299-34.000.

Hauser, Kenneth L.: *See—*
Morin, Robert B.; Spry, Douglas O.; Hauser, Kenneth L.; and Mueller, Richard A., 3,769,316.

Hawkins, Curtis Owen, to Du Pont de Nemours, E. I., and Company. Method for producing a punch. 3,768,343, Cl. 76-107.00s.

Hayashi, Takao: *See—*
Ishige, Sadao; Hayashi, Takao; and Matsukawa, Hiroharu, 3,769,062.

Hayashibara Company: *See—*
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Hayes-Albion Corporation: *See—*
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Hazelton, Donald R.: *See—*
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Hazemag Hartzerkleinerungs- und Vement-Maschinenbau Gesellschaft m.b.H.: *See—*
Smits, Bernhard Johannes, 3,768,743.

Heartz, Robert A.; and Cohen, Dan, to General Electric Company. Compressed data base for radar land mass simulator. 3,769,442, Cl. 35-10.400.

Heathcoat, John, & Co., Limited: *See—*
Hole, Frederick William, 3,768,128.

Heatherington, Kenneth: *See—*
Archibald, John Leheup; and Heatherington, Kenneth, 3,769,412.

Hebertson, Richard M.: *See—*
Cannon, Emerson T.; and Hebertson, Richard M., 3,768,459.

Hechler, Valentine, IV. Liquid spray device. 3,768,777, Cl. 251-319.000.

Hectors, Adrianus Marie Petrus, to Oce-van der Grinten N.V. Resorcinol mono(aryloxy or arylthio) alkyl ethers. 3,769,018, Cl. 96-91.00r.

Heidacher, John W.: *See—*

Schultz, John R.; Heidacher, John W.; Sharer, John M.; Adams, James S.; and Damico, Frank M., 3,769,502.

Heightley, John Donnell, to Bell Telephone Laboratories, Incorporated. Threshold logic three-input adder. 3,769,499, Cl. 235-172.000.

Heilweil, Emanual: *See*—
Wood, Thomas F.; and Heilweil, Emanual, 3,769,348.

Heinss, Bruno Fred, to American Lava Corporation. Process for ceramic composites. 3,768,144, Cl. 29-432.000.

Heintz, Herman, to Massey-Ferguson Inc. Vehicle shift and acceleration control system. 3,768,340, Cl. 74-865.000.

Helmer, Norman D. Athletic mouth protector apparatus. 3,768,465, Cl. 128-136.000.

Hembree, Ray. Supporting device for open topped receptacle. 3,768,763, Cl. 248-97.000.

Hemsath, Klaus H.; and Wright, Dale E., to Midland-Ross Corporation. Combustion apparatus. 3,768,961, Cl. 431-278.000.

Henderson, Samuel R.: *See*—
Cook, Shirl E.; and Henderson, Samuel R., 3,769,208.

Hendrickson, Melvin C., to Zenith Radio Corporation. Varactor tuner driver circuit. 3,769,590, Cl. 325-459.000.

Hendrickson, Richard T.: *See*—
Mizen, Walter J.; Lewis, Richard L.; and Hendrickson, Richard T., 3,768,606.

Henegar, Harold H., to Singer Company, The, mesne. Digitally controlled frequency filter. 3,769,606, Cl. 330-66.000.

Henrioulle, Paul: *See*—
Hermans, Jean Pierre; and Henrioulle, Paul, 3,769,233.

Henry, George R.: *See*—
Freedman, James F.; Henry, George R.; Mayadas, Ashok F.; and Shatzkes, Morris, 3,769,618.

Henry, Raymond Myrl: *See*—
Clampitt, Bert Howard; Henry, Raymond Myrl; and Jones, Joseph William, Jr., 3,769,261.

Hensley, Ida F.: *See*—
Hensley, Raymond; and Hensley, Ida F., 3,768,846.

Hensley, Raymond; and Hensley, Ida F. Interlocking joint. 3,768,846, Cl. 52-758.00d.

Herbener, Henry M. Foundation garments having resilient control units. 3,768,488, Cl. 128-533.000.

Herchner, Dieter, to Licentia Patent-Verwaltungs-G.m.b.H. Gyrator amplifier. 3,769,603, Cl. 330-13.000.

Hercules Incorporated: *See*—
Ganz, Alexander J., 3,769,029.
Jensen, Leo C., 3,768,760.

Hermans, Jean Pierre; and Henrioulle, Paul, to Solvay & Cie. Process for the preparation of a Ziegler-Natta type catalyst. 3,769,233, Cl. 252-429.00a.

Herrick, Edward P.: *See*—
Hale, James C.; and Herrick, Edward P., 3,768,726.

Herrmann, Siegfried: *See*—
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Hershman, Arnold: *See*—
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Paulik, Frank E.; Hershman, Arnold; Roth, James F.; and Knox, Walter R., 3,769,326.
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Heseltine, Donald W.: *See*—
Gilman, Paul B.; and Heseltine, Donald W., 3,769,011.

Heseltine, Donald Warren: *See*—
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Heske, William A.: *See*—
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Hess, Hans-Jurgen E., to Pfizer Inc. Trialkoxyquinazoline. 3,769,286, Cl. 260-251.00q.

Hess, Roland H.; Hoekje, Howard H.; Creasey, Jack R.; and Strain, Franklin, to PPG Industries, Inc. Tire. 3,768,537, Cl. 152-330.000.

Hesse, Kurt; Wagner, Hans; and Schunck, Horst, to Staff & Schwarz GmbH. Foldable lamp shade. 3,769,504, Cl. 240-108.00a.

Hesston Corporation: *See*—
McCanse, James E.; Faber, Frederick L.; and Bauer, Ivan E., 3,768,572.

Hetzel, Donald S.; and Torres, Anibal, to Pfizer Inc. Oxazoline flavoring agents and flavor extenders. 3,769,293, Cl. 260-307.00f.

Heverly, Harold R.: *See*—
Delong, William T.; Szumachowski, Edwin R.; and Heverly, Harold R., 3,769,099.

Hewitt, Gordon Trent, to Colgate Palmolive Company. Polyethylenimine shampoo compositions. 3,769,398, Cl. 424-70.000.

Hewlett-Packard Company: *See*—
Osborne, Thomas E., 3,769,621.

Heyne, Clarence A. Glass feeder shear mechanism. 3,768,360, Cl. 83-623.000.

Hickman, Albert F., to Hickman Developments, Inc. Tandem wheel spring suspension. 3,768,826, Cl. 280-104.50r.

Hickman, Albert F. Self-steering standem axle suspension. 3,768,827, Cl. 280-104.50r.

Hickman Developments, Inc.: *See*—
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Hickmott, Peter William: *See*—
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Hietschmann, Erhard, to Siemens Aktiengesellschaft. Circuit arrangement for improving the short circuit resistance of an LSL circuit by automatically limiting circuit power consumption. 3,769,527, Cl. 307-270.000.

Higgins, Leon G. Multi-purpose ladder assembly. 3,768,592, Cl. 182-22.000.

High Voltage Engineering Corporation: *See*—
Cram, Robert Dana, 3,769,132.

Hill, Allen D.; Larsson, Ake L.; and Rich, Hubert A., to Mattel, Inc. Pop-up learning toy. 3,768,175, Cl. 35-9.00r.

Hill, Arnold M., to Whitbread & Company, Limited. Methods of and apparatus for dispensing potable liquids. 3,768,706, Cl. 222-325.000.

Hill, David W.: *See*—
Neta, Thomas E.; Hill, David W.; and Wiesenborn, Robert F., 3,769,358.

Hill, Harold J.; and Thigpen, David Ross, to Shell Oil Company. Waterflood oil recovery with chromatographically balanced surfactant. 3,768,560, Cl. 166-274.000.

Hill, James D.; Naylor, Hugh E., III; and West, Donald L., to International Business Machines Corporation. Ink jet synchronization and failure detection system. 3,769,630, Cl. 346-75.000.

Hill, James D.; Naylor, Hugh E., III; West, Donald L.; and Williams, Thomas H., to International Business Machines Corporation. In..reasing throughput in ink jet printing by drop skipping and reducing ink jet merging and splatter using a stairstep generator 3,769,631, Cl. 346-75.000.

Hill, Lester M., to Beloit Corporation. Papermaking machine headbox with multiple, stiff, vibrational rods or plates extending downstream in the slice chamber. 3,769,153, Cl. 162-216.000.

Hill, Walter Jennings. Cushioned shipping bag. 3,768,724, Cl. 229-53.000.

Hill-Rom Company, Inc.: *See*—
Schultz, John R.; Heidacher, John W.; Sharer, John M.; Adams, James S.; and Damico, Frank M., 3,769,502.

Hills, Brian A.; Fried, George; and Langner, Helmuth A., to Hills, Brian A., mesne. Two-phase blood pump. 3,768,496, Cl. 137-1.000.

Hills, Brian A., mesne: *See*—
Hills, Brian A.; Fried, George; and Langner, Helmuth A., 3,768,496.

Hinata, Masanao: *See*—
Ohkubo, Kinji; Hinata, Masanao; Noguchi, Junpei; Ohmura, Kunioki; Sato, Akira; and Ogawa, Akira, 3,769,016.

Hindermann, Peter: *See*—
Kolliker, Hans-Peter; Staub, Alfred; and Hindermann, Peter, 3,769,305.

Hino, Masamichi; and Hara, Iwau, to Kubota Tekko Kabushiki Kaisha (Kubota, Ltd.). System for controlling a computing scale. 3,769,498, Cl. 235-151.330.

Hinrichs, Donald R., to Reynolds Metals Company. Apparatus for and method of making plastic film. 3,769,379, Cl. 264-40.000.

Hintz, Harold L., to Westvaco Corporation. Lignin adduct. 3,769,272, Cl. 260-124.00r.

Hioki, Ikuo: *See*—
Nishino, Hisashi; Hosokawa, Teruo; and Hioki, Ikuo, 3,768,888.

Hirai, Akiyoshi; and Kawaguchi, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic brake system. 3,768,868, Cl. 303-6.00c.

Hirzel, Edgar A., to Crane Company. Brake control system. 3,768,873, Cl. 303-213.00c.

Hise, Ralph E.; and Jordan, Russell T., to Martin Marietta Corporation. Apparatus and method for microbial fermentation in a zero gravity environment. 3,769,176, Cl. 195-142.000.

Hitachi, Ltd.: *See*—
Muta, Akinori; Noro, Takanobu; Toda, Gyozo; and Yamazaki, Chieko, 3,769,049.
Ono, Yoichi; Ogirima, Masahiko; Kasano, Hiroyuki; and Kurata, Kazuhiro, 3,769,104.
Saito, Tadashi; and Gejyo, Tetsuo, 3,769,084.

Hoag, Don H., to Clarkson Industries, Inc. Sludge tank with self-cleaning screen and screen for use therein. 3,768,657, Cl. 210-298.000.

Hodosh, Milton: *See*—
Hodosh, Milton; and Cometta, Carl (said Cometta assor. to said), 3,768,472.

Hodosh, Milton; and Cometta, Carl, said Cometta assor. to said Hodosh, Milton. Fluid dispensing gun. 3,768,472, Cl. 128-218.00p.

Hoekje, Howard H.: *See*—
Hess, Roland H.; Hoekje, Howard H.; Creasey, Jack R.; and Strain, Franklin, 3,768,537.

Hoffman, Neil R., to Kelsey-Hayes Company. Tilting pin with spring return. 3,768,603, Cl. 188-72.300.

Hoffmann, Donald R.; and Reed, Stephen L., to Ford Motor Company. Anti-rattle bushing. 3,768,115, Cl. 16-2.000.

Hoffmann-La Roche Inc.: *See*—
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,769,320.
Frank, Ulrich Anton, 3,769,497.
Perry, Clark William, 3,769,350.

Hofmann, Gunter A. G., to Hughes Aircraft Company. Baffle for perforated electrode in a crossed-field switch device. 3,769,537, Cl. 313-161.000.

Holcomb, Norman L.: *See*—
Wardwell, Charles H.; and Holcomb, Norman L., 3,769,103.

Holden, Ernest L. Tire tread. 3,768,535, Cl. 152-209.00r.
Hole, Frederick William, to Heathcoat, John, & Co., Limited. Apparatus for crimping yarn. 3,768,128, Cl. 28-1.800.
Holm, Le Roy W., to Union Oil Company of California. Soluble oil additive concentrate. 3,769,209, Cl. 252-8.55d.
Holmes, James D., Sr. Thoracic and abdominal plate for cadavers and method of using. 3,768,127, Cl. 27-21.000.
Holmes, Richard N.; and Dobbs, Richard A., to McDonnell Douglas Corporation. Non-woven locked ply composite structure. 3,769,142, Cl. 161-53.000.
Holmes, Robert, Jr., to International Telephone and Telegraph Corporation. Method and apparatus for stripping electrical cable ends. 3,768,143, Cl. 29-427.000.
Holovka, Charles, Jr., to International Business Machines Corporation. Travelling cylinder printer with the roller contacting the back of the embossed plate. 3,768,404, Cl. 101-269.000.
Holtmyer, Marlin D.: *See—*
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Hoover, Troy E.; and Wright, Arthur J. Aliphatic amino-substituted flourans. 3,769,302, Cl. 260-335.000.
Horberg, Charles, Jr.; and Shelby, Richard K., to Monsanto Company. Blow mold. 3,768,948, Cl. 425-387.000.
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Horton, Robert A., to Precision Metalsmiths, Inc. Compositions and methods for making molded refractory articles. 3,769,044, Cl. 106-38.300.
Horton, Terry F., to Utility Trailer Manufacturing Company. Disappearing twist lock assembly. 3,768,857, Cl. 296-35.00a.
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Houle, Michel, to Coleman Company, Inc., The. Speed responsive variable diameter pulley. 3,768,323, Cl. 74-230.17e.
Houot, Jean-Jacques: *See—*
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Housel, Richard W., to Atlantic Products Corporation. Pillow-pak carrying case. 3,768,610, Cl. 190-43.000.
Howard, Donald W. Electrical actuated trailer brake control system. 3,768,870, Cl. 303-7.000.
Howard, George C.: *See—*
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Howe, Wesley C. Ball bearing device with barrier seal. 3,768,880, Cl. 308-187.200.
Hoyle, William; and Howarth, Graham Arton, to Ciba-Geigy Corporation. Nitrofuryl derivatives of 5-substituted isoxazolines. 3,769,295, Cl. 260-307.00f.
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Hubele, Adolf, to Ciba-Geigy AG. Combatting bacteria and fungi with cyanocarbamoyloximes. 3,769,423, Cl. 424-304.000.
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Hunter, Joe S.; Bailey, Escar L.; and Little, Little J., to United States of America, Army. Flueric direct-impact modulator accelerometer. 3,768,316, Cl. 73-515.000.
Hurst, Francis Carl, to Chrysler Corporation. Exhaust emission control for internal combustion engines utilizing an electrically heated choke. 3,768,453, Cl. 123-119.00f.
Hurst, Vernon J. Hydrothermal transformation of kaolin. 3,769,383, Cl. 423-328.000.
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Ihde, Richard C., to Champion International Corporation. Method and apparatus for scoring synthetic plastic sheet material. 3,768,950, Cl. 425-398.000.
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Ito, Shin; and Ushijima, Fmihiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Angular acceleration sensor. 3,768,374, Cl. 91-419.000.
Ito, Yasutaka, to Tokyo Seimitsu Co., Ltd. Minitype electronic micrometer. 3,768,169, Cl. 33-172.00e.
Itoh, Noboru; Tosa, Senji; Tsukahara, Hirokazu; and Kobayashi, Norio, to Mitsubishi Paper Mills, Ltd. Developer monobath free from formation of colored sludge. 3,769,015, Cl. 96-61.00m.
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Jennings, Samuel J., to Community Gin Company. Life Preserver bubble. 3,768,467, Cl. 128-145.00r.
Jensen, Leo C., to Hercules Incorporated. Graphite fiber composite covering employing multi-directional. 3,768,760, Cl. 244-123.000.
Jerzewski, Lawrence, Jr., to Johnson & Johnson. Adhesive tape package. 3,768,641, Cl. 206-52.00r.
Jessup, Richard J.; and Sulfaro, Andrew N., to Oxy Metal Finishing Corporation. Apparatus for drying workpieces in bulk. 3,768,173, Cl. 34-131.000.
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Johanson, Edwin S.; Chervenak, Michael C.; and Wolk, Ronald H., to Hydrocarbon Research, Inc. Hydrogenation of coal using unreduced catalyst. 3,769,198, Cl. 208-10.000.
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Johnson, Duane M.; and Hazelton, Donald R., to United States of America, Navy. Pyrotechnic composition for generating lead based smoke. 3,769,107, Cl. 149-19.600.
Johnson, Gerald D., to Portec, Inc. Vibrating screening apparatus. 3,768,647, Cl. 209-364.000.
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Jones, John Leslie, Sr.; and Jones, John Leslie, Jr. Process for manufacturing sheet binders. 3,769,130, Cl. 156-259.000.
Jones, John Paul, Jr., to Compuline Corporation. Electrolytic time delay capsule with plastic cup electrode holder. 3,769,557, Cl. 317-230.000.
Jones, Joseph William, Jr.: *See*—
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Jury, Harold Rex, to Jury & Spiers Proprietary Limited. Light weight tubular columns. 3,768,130, Cl. 29-155.00c.
Jury, Harold Rex, to Jury & Spiers Proprietary Limited. Process for the production of tube from ductile metal. 3,768,288, Cl. 72-61.000.
Kabushiki Kaisha: *See*—
Kimura, Sachio; and Aoki, Yoshiaki, 3,769,620.
Kabushiki Kaisha Crown Sangyo: *See*—
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Kabushiki Kaisha Kito: *See*—
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Shirota, Goroo; Imanishi, Hiroshi; Shibatsuji, Naoya; Nakayama, Isamu; and Ueda, Masatoshi, 3,768,216.
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Tsuru, Kokichi, 3,768,292.
Kafejiev, Iliya Chudomirov; Guenchev, Lubomir Nikolov; and Klyamov, Kostadin Spirov, to DSO "Bulgarplod". Method of peeling fruits and vegetables. 3,769,439, Cl. 426-482.000.
Kajino, Katsura: *See*—
Ida, Shunya; Hosokawa, Kenjiro; Hasegawa, Hiroyoshi; Nakanishi, Seinosuke; Kajino, Katsura; and Ueda, Keizo, 3,769,060.
Kalawaites, Frank, to Johnson & Johnson. Apparatus (closed sandwich with high knee backing means foraminous throughout its area). 3,768,121, Cl. 19-161.00p.
Kalb, Jeffrey C.; and Widlar, Robert J., to National Semiconductor Corporation. Multiple emitter transistor apparatus. 3,769,530, Cl. 307-299.00a.
Kalfsbeek, James: *See*—
Goodrich, Robert S., 3,768,189.
Kalfsbeek, Peter: *See*—
Goodrich, Robert S., 3,768,189.
Kallert, Wilhelm: *See*—
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Kallstrand, Gosta, to AB Svenska Maskinverken Kallhall. Economizer with flues connected in series. 3,768,447, Cl. 122-421.000.
Kalopissis, Gregoire; Roussopoulos, Paul; and Zviak, Charles, to Societe Anonyme dite: L'Oreal. Permanently waving and permanently setting of hair. 3,768,490, Cl. 132-7.000.
Kamata, Takashi: *See*—
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Kamulski, David A.: *See*—
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Kaneda, Takuji; and Mizuki, Eiichi, to Fuji Photo Film Co., Ltd. Recording film for charged electron beam recording. 3,769,518, Cl. 250-472.000.
Kanegafuchi Boseki Kabushiki Kaisha: *See*—
Ida, Shunya; Hosokawa, Kenjiro; Hasegawa, Hiroyoshi; Nakanishi, Seinosuke; Kajino, Katsura; and Ueda, Keizo, 3,769,060.
Kanno, Hiroshi; and Okamoto, Kazuo, 3,769,149.
Kanetake, Norio; Maruyama, Ikuo; and Morita, Katsuyuki, to Kabushiki Kaisha Kito. Process of manufacturing fine powders of metal halide. 3,769,098, Cl. 148-6.240.
Kannegiesser, Herbert; Juraschek, Richard; and Mussiger, Klaus, to Kannegiesser Maschinenfabrik Kommanditgesellschaft. Apparatus for printing on textile strips and pieces. 3,768,280, Cl. 68-5.00d.
Kannegiesser Maschinenfabrik Kommanditgesellschaft: *See*—
Kannegiesser, Herbert; Juraschek, Richard; and Mussiger, Klaus, 3,768,280.
Kanno, Hiroaki. Metal binding for a heel of ski boots. 3,768,822, Cl. 280-11.35t.
Kanno, Hiroshi; and Okamoto, Kazuo, to Kanegafuchi Boseki Kabushiki Kaisha. Process for producing acrylic composite filaments and said composite filaments. 3,769,149, Cl. 161-172.000.
Kaplow, Milton; and Halik, Joseph J., to General Foods Corporation. Microbial stabilization of a combined meat, vegetable and gravy food product. 3,769,042, Cl. 426-326.000.
Karathanos, Demetrius: *See*—
Weston, Donald E.; Kupetis, Raymond F.; and Karathanos, Demetrius, 3,769,478.
Karl Kristian Kobs Kroyer: *See*—
Rasmussen, Torben Borup; Ottosen, Kjeld Dossing; and Persson, Torsten Bengt, 3,769,115.
Kartasuk, Raymond H.; and Smierciak, Walter, to Wilton Corporation. Vise assembly. 3,768,797, Cl. 269-283.000.
Kasano, Hiroyuki: *See*—
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Kaspers, Helmut: *See*—
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Katchka, Jay R., to Robertshaw Controls Company. Dual lever mechanism. 3,768,332, Cl. 74-491.000.

Kato, Toshio; and Yoshimura, Kenji, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for preparing aryl hydroxybenzoate. 3,769,321, Cl. 260-473.00s.

Katz, Morris H.; Sams, Powell F.; and Riley, Duane M., to Pillsbury Company, The. Method for heat processing food products packaged in flexible containers. 3,769,028, Cl. 426-345.000.

Katz, Murray; and Stedman, James K., to United Aircraft Corporation. Electrochemical cell. 3,769,090, Cl. 136-86.00r.

Kauer, George C., Jr.; and Brooks, Louis E., to Air Techniques Incorporated. Selector valve and use thereof in a fractionation system. 3,768,500, Cl. 137-119.000.

Kaufman, Melvin R., to General Electric Company. Rack level adjustment system in a dishwasher. 3,768,883, Cl. 312-351.000.

Kaufmann, Michael: *See—*
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Kawaguchi, Katsuyuki, to Mitsubishi Jukogyo Kabushiki Kaisha. Combustion apparatus for a gas turbine. 3,768,250, Cl. 60-39.74r.

Kawata, Teruo: *See—*
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Kayser, Lutz Tilo. Valve. 3,768,770, Cl. 251-25.000.

Kazan, John, to American Cyanamid Company. Production of D, D-2, 2-(ethylenediimino) di-1-butanol hydrochloride. 3,769,347, Cl. 260-584.00r.

Keck, Johannes: *See—*
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Keen, Everett M.; Siciliano, Anthony J.; and Keen, David A., to Diamond International Corporation. Manure drying shed arrangement. 3,768,443, Cl. 119-22.000.

Keener, Ronald L.; and Raterink, Harry R., to Rohm and Haas Company. Preparation of 3,3'-polythiodipropionic acids and their derivatives. 3,769,315, Cl. 260-465.800.

Kehoe, Harold H.: *See—*
Buchtel, Dean H., 3,768,684.

Keith, Garland B.: *See—*
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Keller, Toni W.; and Tschopp, Werner H., to Spectrospin AG. Apparatus for varying the strength of a stabilized magnetic field. 3,769,554, Cl. 317-123.000.

Keller, Wolfgang: *See—*
Stut, Hans; and Keller, Wolfgang, 3,769,484.

Kelley, Wilfred H., Jr., to White Farm Equipment Company. Lift truck mast. 3,768,595, Cl. 187-9.000.

Kelly, James O.: *See—*
Propst, Robert L.; and Kelly, James O., 3,768,116.

Kelly, Ralph; and Ritter, Edmond Jean. Mildness additive. 3,769,242, Cl. 252-542.000.

Kelsey-Hayes Company: *See—*
Hoffman, Neil R., 3,768,603.
Riordan, Hugh E., 3,768,874.
Rozmus, Walter J.; and Rozmus, Matt T., 3,768,718.

Kemp, Kenneth Albert Walters; and Mowbray, Dorian Farrar, to C.A.V. Limited. Liquid fuel injection pumping apparatus. 3,768,929, Cl. 417-270.000.

Kenmoku, Yoshihiro: *See—*
Sugano, Izuru; Kenmoku, Yoshihiro; Akashi, Tsuneo; Matsubara, Tetsujin; and Okuda, Taneaki, 3,769,219.

Kenney, Edward S.; and Jacobs, Alan M., to Research Corporation. Dynamic radiography. 3,769,507, Cl. 250-395.000.

Kenny, Philip Charles, to Varian Associates. Method and apparatus for electrostatically recording with a closed loop web drive. 3,769,628, Cl. 346-74.0es.

Kent, Robert W.; and Kent, Robert W., Jr. Maximum security lock assemblies. 3,768,284, Cl. 70-104.000.

Kent, Robert W., Jr.: *See—*
Kent, Robert W.; and Kent, Robert W., Jr., 3,768,284.

Kenyon, Norman, to International Nickel Company, Inc., The. Alloy steel particularly adaptable for use as a filler metal. 3,769,003, Cl. 75-128.00w.

Keuffel & Esser Company: *See—*
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Kewanee Oil Company: *See—*
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Kiefer, John E.; and Mumpower, Robert C., II, to Eastman Kodak Company. Tobacco smoke filter. 3,768,489, Cl. 131-201.00b.

Kiener, Max. Topographical display device. 3,768,181, Cl. 35-41.000.

Kiesler, A. James: *See—*
Pagnotta, Gasper; Kiesler, A. James; and Moffatt, William G., 3,768,148.

Kim, Sang-Chul, to General Electric Company. Lamp fixture having dichoric filter arrangement for selectively directing heat and light. 3,769,503, Cl. 240-41.35r.

Kimberly-Clark Corporation: *See—*
Gresham, James T.; and Juracek, Louis J., Jr., 3,769,145.

Kimura, Sachio; and Aoki, Yoshiaki, to Kabushiki Kaisha. Plural band tuner having means to rotate resistor support plate for fine tuning. 3,769,620, Cl. 334-11.000.

Kinard, William C. Tennis ball holder. 3,768,709, Cl. 224-5.00d.

Kincannon, Don F.; Macuila, L. Andrew; and Tiederman, William G., Jr., to Oklahoma State University. Dispersed growth biological sewage treatment process. 3,769,204, Cl. 210-6.000.

King, Charles Spencer, to Standard-Triumph Motor Company Limited, The. Vehicle suspension. 3,768,584, Cl. 180-73.00r.

King, Terence; and Rose, John Brewster, to Imperial Chemical Industries, Limited. Aromatic polysulphone coated article and bonded structure. 3,769,150, Cl. 161-182.000.

Kinney, Thomas D.; and Pickett, John E. P. Electron microscopy tissue grid staining and storing rack and method. 3,768,914, Cl. 356-244.000.

Kinter, Malcolm L.: *See—*
Antypas, George A.; and Kinter, Malcolm L., 3,769,536.

Kirby, Russell F. Preventing wire cable kinking. 3,768,525, Cl. 140-147.000.

Kirst, Paul Gerhard: *See—*
Wiest, Hubert; Bergmeister, Eduard; Kirst, Paul Gerhard; and Schmidkonz, Christian, 3,769,251.

Kitajima, Nobuo: *See—*
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Yukutomi, Masuo; Tanaka, Yoshitaka; Genda, Satosi; and Kitaura, Masaki, 3,769,349.

Kitzner, Ernest W.; Rhodes, Alex; and Shachter, Moses, to Ford Motor Company. Catalytic converter with electrically preheated catalyst. 3,768,982, Cl. 23-299.00f.

Kiyansky, Ivan Alexeevich: *See—*
Borok, Boris Alexandrovich; Dzneladze, Zhan Iosifovich; Petrov, Leonid Nikolaevich; Zaikin, Evgeny Ivanovich; Kiyansky, Ivan Alexeevich; and Lobashov, Boris Pavlovich, 3,769,008.

Kizawa, Kango, to Meiken Kagakukogyo Kabushiki Kaisha. Process for applying emulsion coating material to produce crakle patterns. 3,769,063, Cl. 117-41.000.

Klayum, Milton A.: *See—*
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Klein, Harold T., to Robbins Company, The. Drill pipe breakout mechanism. 3,768,579, Cl. 173-164.000.

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Klein, Schanzlin & Becker Aktiengesellschaft: *See—*
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Klein, Victor A. Auxiliary shock absorber mounting bracket. 3,768,828, Cl. 280-124.00r.

Kleiner, Fredric; and Fogel, Harvey Philip, to General Foods Corporation. Process for sealing toaster sandwich. 3,769,035, Cl. 426-244.000.

Kleinert, Jurg, to Chocoladefabriken Lindt & Sprungli Aktiengesellschaft. Process for the fabrication of chocolate, especially milk chocolate. 3,769,030, Cl. 426-45.000.

Kleinert, Jurg, to Chocoladefabriken Lindt & Sprungli Aktiengesellschaft. Process for fabricating liquid-filled chocolate products with an inner crust. 3,769,039, Cl. 426-282.000.

Klemm, Manfred, to Klein, Schanzlin & Becker Aktiengesellschaft. Pump arrangement for consumer apparatus. 3,768,925, Cl. 417-8.000.

Kleszynski, Richard Raymond: *See—*
Aldred, John Phillip; Bastian, James Winslow; and Kleszynski, Richard Raymond, 3,769,405.

Klimecki, Vladimir. Method and apparatus for evaluation of the intensity of spots. 3,768,913, Cl. 356-203.000.

Klingsberg, Erwin, to American Cyanamid Company. Selenium and tellurium compounds of halogenated arenes and preparation. 3,769,276, Cl. 260-239.00r.

Klock, John W., to Research Corporation. Apparatus for the production of algae indicating a filtering machine. 3,768,200, Cl. 47-1.400.

Kloppe, Herbert; and Pfadenhauer, Dieter, to Ford Motor Company. Steering wheel with safety air cushion. 3,768,824, Cl. 280-87.00r.

Klyamov, Kostadin Spirov: *See—*
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Knapsack Aktiengesellschaft: *See—*
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Knorr-Bremse GmbH: *See—*
Pullinger, Hans; and Balut, Ernst, 3,768,598.

Knox, John A.; and Fredrickson, Sherman E., to Halliburton Company. Method of fracture acidizing a well formation. 3,768,564, Cl. 166-307.000.

Knox, Walter K.: *See—*
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Knox, Walter R.: *See—*
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Paulik, Frank E.; Hershman, Arnold; Knox, Walter R.; and Roth, James F., 3,769,329.
Knutson, Gaylen M.; and Biale, John, said Knutson and said Biale assors. to Union Oil Company of California. Adhesive composition and method of preparation. 3,769,151, Cl. 161-204.000.
Kobayashi, Hisashi: *See*—
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Kobori, Toshio, to Minolta Camera Kabushiki Kaisha. Photographic camera with electric shutter. 3,768,390, Cl. 95-53.0ab.
Kodon, Inc.: *See*—
Crane, Ronald C., 3,769,545.
Koefferlein, Rainer, to Siemens Aktiengesellschaft. Cam-controlled perforators. 3,768,359, Cl. 83-563.000.
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Kolb, Erich, to Bosch, Robert, G.m.b.H. Windshield wiper drive. 3,768,112, Cl. 15-250.000.
Kolb, Erich, to Bosch, Robert, G.m.b.H. Windshield wiper assembly. 3,768,113, Cl. 15-250.320.
Kolehmainen, Jack A.; and Lemieux, George E., to Ford Motor Company. Throttle pressure control for an automatic power transmission mechanism. 3,768,339, Cl. 74-864.000.
Kolek, Robert L., to Westinghouse Electric Corporation. Resinous-microsphere-glass fiber composite. 3,769,126, Cl. 156-172.000.
Kolisnyk, Vitaly Nikolaevich. Electro-slag furnace for producing continuous ingot. 3,768,543, Cl. 164-252.000.
Koller, Emil, to Maschinenfabrik Schweiter AG. Yarn guiding device for machine winding cross wound bobbins. 3,768,745, Cl. 242-43.000.
Kolliker, Hans-Peter; Staub, Alfred; and Hindermann, Peter, to Ciba-Geigy AG. Dispersible anthraquinone dyestuffs. 3,769,305, Cl. 260-376.000.
Kollonitsch, Janos; and Gal, George, to Merck & Co., Inc. Carboxyphenyl esters of propenyl and propadienylphosphonic acids. 3,769,364, Cl. 260-741.000.
Kolm, Henry H.: *See*—
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Kolton, David: *See*—
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Komendat, David T.; and Reed, Charles F., to Avery Products Corporation. Temporary support for webbed material. 3,769,147, Cl. 161-82.000.
Kondo, Keji; Yamada, Yuzo; Mitzugi, Koji; and Otsuka, Shin-Ichiro, to Ajinomoto Co., Inc. Method of producing coenzyme Q_{10} by microorganisms. 3,769,170, Cl. 195-82.000.
Kondo, Shinichi: *See*—
Hara, Takeshi; Niida, Taro; Satoh, Kimio; Kondo, Shinichi; Akita, Eiichi; Sezaki, Masaji; Shimura, Masaru; Nishio, Takako; Hamamoto, Kazuko; and Koike, Makiko, 3,769,403.
Konig, Fritz; and Konig, Klaus. Apparatus for measuring the dry unit weight of a soil. 3,769,581, Cl. 324-65.00r.
Konig, Klaus: *See*—
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Konig, Klaus; Traubel, Harro; Reischl, Artur; and Zorn, Bruno, to Bayer Aktiengesellschaft. Production of microporous sheets. 3,769,381, Cl. 264-41.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Sakamoto, Kenro; Fushiki, Isamu; Arai, Shinji; Shimizu, Fumio; Kuwabara, Yoshimi; Nakajima, Tomio; Sugita, Sadao; Inokuma, Hiroyuki; and Tejima, Setsuzo, 3,769,017.
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Kopp, Georg, to Schweizerische Industrie-Gesellschaft. Device for the erection of blanks for making plug-in-folding boxes. 3,768,381, Cl. 93-53.0lf.
Koppers Company, Inc.: *See*—
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Koslow, George. Machine for packaging long lengths. 3,768,231, Cl. 53-59.00r.
Kotera, Noboru; Nishikawa, Satoru; and Sakamoto, Hitoshi, to Dai Nippon Toryo Kabushiki Kaisha. Radiothermoluminescence dosimeters and materials therefor. 3,769,510, Cl. 250-459.000.
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Kovacs, William L.; Pflaumer, Phillip F.; and Whyte, David D., to Procter & Gamble Company, The. Separation of phosphorous and phosphoric acids by alcoholic counter-current extraction. 3,769,384, Cl. 423-316.000.
Kovats, Leslie P., to Anheuser-Busch, Incorporated. Starch derivative protective colloids in emulsion polymer systems. 3,769,248, Cl. 260-17.4st.
Kraeft, Robert W. Automatic food tray cleaning machine. 3,768,493, Cl. 134-46.000.
Krambrock, Wolfgang, to Farbenfabriken Bayer Aktiengesellschaft. Method of and an apparatus for pneumatically conveying feedstock. 3,768,867, Cl. 302-53.000.
Kramer, Hyman. Gravity lock for extension ladders. 3,768,594, Cl. 182-2102000.
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Krauja, Ziedonis I.; Kranc, Stanley J.; and Wahl, Thomas V., Jr., to Caterpillar Tractor Company. Fuel viscosity and density sensing fuel pump rack stop. 3,768,368, Cl. 91-378.000.
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Krehlik, Joseph F.: *See*—
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Krepak, John C. Digital thermometer. 3,768,310, Cl. 73-362.0ar.
Krick, John B.; and Coleman, Bernard, to Ronean Controller Inc. Solid state motor control on-off timer. 3,769,529, Cl. 307-293.000.
Krishna, Sorinder; and Davis, John R., to Westinghouse Electric Corporation. High speed, high voltage transistor. 3,769,563, Cl. 317-235.00r.
Kroder, Ernest A., to Dentsply Research & Development Corporation. Connecting metal elements and products thereof. 3,768,342, Cl. 76-101.00a.
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Kruger, Gerd; Zipp, Otmar; Keck, Johannes; Nickl, Josef; Machleidt, Hans; Ohnacker, Gerhard; Engelhorn, Robert; and Puschmann, Sigfrid, to Boehringer Ingelheim G.m.b.H. Pharmaceutical compositions containing a halo-substituted 2-amino-benzylamine-morpholid or a salt thereof. 3,769,408, Cl. 424-248.000.
Kryznoski, Louis F., to Atlantic Products Corporation. Travel kit. 3,768,531, Cl. 150-32.500.
Kubek, John, 50% to Sides, Maxweldon. Landing gear strut-to-ski socket connection. 3,768,758, Cl. 244-108.000.
Kubisch, Hans-Joachim; Seifert, Richard; and Thorn, Walter, to Moteren- und Turbinen-Union Friedrichshafen GmbH. Cylinder crankcase assembly for dual crankshaft multi-cylinder engine. 3,768,252, Cl. 60-97.00r.
Kubota Tekko Kabushiki Kaisha (Kubota, Ltd.): *See*—
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Kucharski, Lawrence, Jr., to Bourns, Inc. Multiturn adjustment potentiometer ratcheting mechanism. 3,768,325, Cl. 74-405.000.
Kuckertz, Herbert; Arpe, Hans-Jurgen; and Schulz, Lothar, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the preparation of acetates of 1,3-propanediol. 3,769,331, Cl. 260-491.000.
Kuderna, Jerome C., Jr.: *See*—
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Kuhlthau, Hans-Peter; and Raue, Roderich, to Bayer Aktiengesellschaft. Hydrazone dyestuffs. 3,769,279, Cl. 260-240.00g.
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Kuiesza, Chester P., to International Paper Company. Resin impregnated cellulosic veneer and laminated panels. 3,769,143, Cl. 161-156.000.
Kullman, Russell M. H.; and Reinhardt, Robert M., to United States of America, Agriculture. Sensitized textiles with decreased formaldehyde odor. 3,768,969, Cl. 8-186.000.
Kummer, Werner: *See*—
Stahle, Helmut; Kuppe, Herbert; Kummer, Werner; and Samtleben, Hans-Wolfgang, 3,769,288.
Kumpe, Wilhelm. Machine for coating sheets of paper and the like with liquid coating materials. 3,768,438, Cl. 118-262.000.

Kuntson, Dale A., to Applied Power Inc. Force release device. 3,768,369, Cl. 91-378.000.

Kunze, Wolfgang: *See—*
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Kunzinger, Frederick Francis: *See—*
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Kuo, Chan Hwa; Taub, David; and Wendler, Norman L., to Merck & Co., Inc. Process for preparing 3-oxygenated-estra-1,3, 5(10), 8, 14-pentaene-17-one compounds. 3,769,306, Cl. 260-397.100.

Kuo, Charles C. Y.; and Angel, Henry S., to Engelhard Minerals and Chemicals Corporation. Method of preparing ruthenium- or tridium-containing components for resistors. 3,769,382, Cl. 264-61.000.

Kupersmit, Julius B. Small volume pilfer proof containers. 3,768,722, Cl. 229-47.000.

Kupetis, Raymond F.: *See—*
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Kupfer, David; Roscoe, Henry George; and Blickens, Donald Arthur, to American Cyanamid Company. Method of inhibiting gastric acid secretion. 3,769,413, Cl. 424-270.000.

Kuppe, Herbert: *See—*
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Kurata, Kazuhiro: *See—*
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Davis, Dennis J.; Sudnick, Dennis J.; Juhasz, John E.; and Kurichh, Sham, 3,768,875.

Kurimsky, Albert; and Rosenhagen, William, to Rowe International Inc. Coin mechanism with two-nickel change replenisher and electrical coin return. 3,768,615, Cl. 194-2.000.

Kurtenbach, Aelred J.; Morgan, James B.; and Espeset, Paul A., to Daktronics, Inc. Readout. 3,768,188, Cl. 40-130.00e.

Kurtz, Leonard D., to Sutures, Inc. Plaster composition. 3,769,052, Cl. 106-111.000.

Kurz, John C., to Advanced Air, Inc. Fire damper frames. 3,768,223, Cl. 52-658.000.

Kusunoki, Toshio, to Matsushita Electric Werke, Ltd. Facial sauna. 3,768,483, Cl. 128-368.000.

Kuts, Mathew, to Vulcan Corporation, mesne. Trimming apparatus. 3,768,101, Cl. 83-408.000.

Kuwabara, Yoshimi: *See—*
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Kwan-Gett, Clifford S.; and Jacobsen, Stephen C., to University of Utah. Implantable artificial urethral valve. 3,768,102, Cl. 3-1.000.

Kyla-Junnila, Aimo: *See—*
Back, Karl Johan; and Kyla-Junnila, Aimo, 3,768,852.

Kyodo Chemical Co., Ltd.: *See—*
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La Vier, Gordon. Loading device. 3,768,671, Cl. 214-77.00r.

Lacroix, Jean-Baptiste: *See—*
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Laerdal, Asmund Sigurd. Pressurized fluid dispensing container. 3,768,696, Cl. 222-29.000.

Laffont, Maurice; and Houot, Jean-Jacques, to Entreprise de Recherches et d'Activites Petrolieres (Elf). Drilling or production platform for work at sea. 3,768,268, Cl. 61-46.500.

Lafon, Louis. Compositions and methods for the treatment of hyperlipemia. 3,769,436, Cl. 424-337.000.

Lagermasini, Joseph P.; and Warner, Leadom A., to GTE Sylvania, Incorporated. Process for chemical milling. 3,769,111, Cl. 156-5.000.

Laham, George K. Animal repelling device. 3,768,441, Cl. 119-1.000.

LaHaye, Paul G. Damper valve. 3,768,512, Cl. 137-601.000.

Laing, Marvin R., to Humphrey Elevator and Truck Company. Lock device for elevator safety brake. 3,768,609, Cl. 188-184.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
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Lampansky, Dietmar; and Schudel, Peter, to Givaudan Corporation. 8-Mercapto-p-menthane-3-ol and ester derivatives. 3,769,328, Cl. 260-468.00r.

Lancaster, James Kenneth; and Yates, David William, to Caludon Engineering Company Limited. Machine tool having two adjustable cutter heads. 3,768,364, Cl. 90-15.000.

Landgraf, Claus-Adolf; Seeger, Ernst; Engel, Wolfhard; Teufel, Helmut; and Machleidt, Hans, to Boehringer Ingelheim G.m.b.H. 2-Methyl-3-aminoalkyl-3-phenyl-indolines. 3,769,299, Cl. 260-326.110.

Landt, Uwe; Slifert, Helmut; and Bretschneider, Otto, to Knapsack Aktiengesellschaft. Apparatus for the manufacture of potassium. 3,768,790, Cl. 266-15.000.

Lane, Bert: *See—*
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Langecker, Erhard. Device for preparing labels or plates in a blow molding apparatus from thermoplastic artificial material. 3,768,942, Cl. 425-126.000.

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Langley Alloys, Limited: *See—*
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Lapidus, Milton; and McGettigan, Marian M., to American Home Products Corporation. L-aspartic acid derivatives. 3,769,333, Cl. 260-518.00a.

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Larsson, Ake L.: *See—*
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Lash, Donald W., to Bulman, E. O., Manufacturing Company, Inc., The. Multiple roll tape dispenser. 3,768,713, Cl. 225-34.000.

Latella, Anthony S. Sheath knitter. 3,768,278, Cl. 66-9.00a.

Latham, S. Duane; and Seeley, Robert D., to Anheuser-Busch, Incorporated. Egg composition. 3,769,404, Cl. 99-113.000.

Latreille, Maurice Gaston, to American Can Company. Method for finishing blow molded plastic containers in the mold. 3,769,394, Cl. 264-98.000.

Lauf, Jay H. Collapsible and expandable enclosure. 3,768,855, Cl. 296-27.000.

Lavado, Neal M., to Altair, Inc. Fail safe thermostatic switch. 3,768,731, Cl. 236-93.000.

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Lay, Michael T., to McGraw-Edison Company. Power tool safety lock device for manual switch with switch actuator interlock structure defeatedly released by chuck key. 3,769,473, Cl. 200-61.58r.

LCM Corporation: *See—*
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Le Page, Jean Francois: *See—*
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Leas, Jeffrey Alan: *See—*
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Leas, Lawrence E.; Leas, Robert L.; and Johnson, Cecil J., to Leas Brothers Development Corporation. Pollution-free fuels. 3,769,197, Cl. 208-8.000.

Leas, Robert L.: *See—*
Leas, Lawrence E.; Leas, Robert L.; and Johnson, Cecil J., 3,769,197.

Leas, Vernon E.; and Leas, Jeffrey Alan, to Diverse Ventures Corporation. Liquid dispensing system and receptacle therefor. 3,768,701, Cl. 222-129.400.

Leboutet, Hubert P.; and Bensussan, Andre M., to Thomson-CSF. Particle preaccelerator arrangement. 3,769,599, Cl. 328-233.000.

Ledbetter, Harvey D.: *See—*
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Lee, Chen-Hsiung; Lominac, Harold R.; Ross, Charles O.; and Wolfe, Bruce A., to International Business Machines Corporation. Fluid droplet printer. 3,769,624, Cl. 346-1.000.

Lee, Henry L., Jr.; and Stoffey, Donald G., to Lee Pharmaceuticals, mesne. Polyethylene glycol diacrylate. 3,769,336, Cl. 260-486.00r.

Lee, Irvin I., to Lear Siegler, Inc. Voltage sensitive control device. 3,769,550, Cl. 317-33.0sc.

Lee, James M.: *See—*
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Lee, John S.; and Alves, William R., to General Electric Company. Radioactive halogen monitoring system. 3,769,505, Cl. 250-394.000.

Lee, Kirkwood M., to Eaton Corporation. Hoist electric control handle with first operating means, including a movable S-shaped resistor, and second operating means. 3,769,480, Cl. 200-157.000.

Lee, Norman C., to Carolina Enterprises, Inc. Children's riding toy having mechanical driving means. 3,768,835, Cl. 280-215.000.

Lee Pharmaceuticals, mesne: *See—*
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Lee, Raymond, Organization, Inc., The: *See—*
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Lee, Wooycung; and Weekman, Vern W., to Mobil Oil Corporation. Thermal energy control for a FCC system. 3,769,203, Cl. 208-164.000.

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Leeds, Winthrop M., to Westinghouse Electric Corporation. Puffer-type compressed-gas circuit interrupter with double-flow action. 3,769,479, Cl. 200-148.00a.

Leeming, Michael R. G., to American Home Products Corporation. Enzymatic monohydrolysis of prostaglandin diester. 3,769,166, Cl. 195-51.00r.

Lees, Norman G. Curling broom and cover. 3,768,111, Cl. 15-210.00r.

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Leparskas, Romas, to Borg-Warner Corporation. Flow control valve. 3,768,522, Cl. 138-40.000.

Lerner, Nathan B., to Braun, W., Company. Multi-product dispenser package. 3,768,697, Cl. 222-80.000.

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Leutner, Bernd; Schwarzmann, Matthias; and Ohlinger, Manfred, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Ferromagnetic chromium dioxide crystals. 3,769,087, Cl. 117-234.000.

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Levine, Leonard, to Dow Chemical Company, The. 2,2'-(Lower-alkylenedithio)-bis-3,5,6-trihalo pyrazines and derivatives thereof. 3,769,285, Cl. 260-250.00r.

Levinson, Arthur A.; and Basa, Kenneth B., to National Can Corporation. Method of dyeing protein seed particles. 3,769,041, Cl. 426-250.000.

Levitt, George, to Du Pont de Nemours, E. I., and Company. Novel herbicides. 3,769,290, Cl. 260-260.000.

Lew, Sandy Y.; and Conley, Edward F., to Brunswick Corporation. Catalyst structure. 3,769,240, Cl. 252-268.000.

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Lewis, James Marvin; and Wainer, Eugene, to Horizons, Incorporated. Light sensitive reproduction and electron beam sensitive material. 3,769,023, Cl. 96-115.00p.

Lewis, John A., to Ford Motor Company. Engine exhaust gas recirculating control. 3,768,452, Cl. 123-119.00a.

Lewis, Richard A., to Addressograph-Multigraph Corporation. Direct image composing machine having means to prevent pressure overload of printing characters. 3,768,619, Cl. 197-6.400.

Lewis, Richard L.: *See—*
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Lewis, Richard L., to Bendix Corporation, The. Hydraulic brake booster. 3,768,370, Cl. 91-391.00r.

Lewis, Richard L., to Bendix Corporation. Proportioning valve with load sensing blend back. 3,768,876, Cl. 303-22.00r.

Lewis, Theras Gordon, to Bell Telephone Laboratories, Incorporated. Time division switching system bridging circuit. 3,769,461, Cl. 179-15.0at.

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Liberman, Richard A.; Bond, William C.; and Soltysiak, Edwin J., to General Datacomm Industries, Inc. Method and apparatus for testing teletypewriter terminals. 3,769,454, Cl. 178-58.00r.

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Lin, Chao-Han, to National Cash Register Company, The. Pressure-sensitive record sheets employing amido-and sulfoxamido-substituted fluorans. 3,769,057, Cl. 117-36.200.

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Lindberg, Allen W., to ACF Industries, Incorporated. Electronic energizing system for solenoid fuel injectors. 3,768,449, Cl. 123-32.0ea.

Lindmayer, Joseph, to Communications Satellite Corporation. Surface inversion solar cell and method of forming same. 3,769,558, Cl. 317-234.00r.

Lindo, Neil A.: *See—*
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Lindson, John T.: *See—*
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Lingle, Cleo M. Cooler door for use in an offset door opening. 3,768,206, Cl. 49-486.000.

Linick, Richard. Treatment apparatus for the eye and orbit area. 3,768,485, Cl. 128-402.000.

Linke, Wolfgang Gerd, to Gillette Company, The. Cap. 3,768,688, Cl. 220-23.000.

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Little, Arthur J.; and Mayer, William R., to Stewart-Warner Corporation. Buzzer manufacturing method. 3,768,158, Cl. 29-622.000.

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London, S. Paul, to Metaframe Corporation. Brine shrimp harvesting apparatus. 3,768,193, Cl. 43-6.500.

Long, Alan Gibson; and Weir, Niall Galbraith, to Glaxo Laboratories, Limited. Preparation of Δ^3-4 carboxy cephalosporins having a 3-vinyl or substituted 3-vinyl group. 3,769,277, Cl. 260-243.00c.
Long, Geoffrey, to United Kingdom Atomic Energy Authority. Apparatus for carbon content analysis. 3,769,189, Cl. 204-195.00r.
Long, Gordon D., to Tektronix Inc. Feedback amplifier circuit. 3,769,605, Cl. 330-30.00d.
Long, John B., to Marmon Group, Inc., The. Roof drilling and bolting apparatus having an operator carrying and protective device. 3,768,574, Cl. 173-23.000.
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Mackay, John A., to Unison Corporation. Grinding machine. 3,768,212, Cl. 51-82.00r.
MacKinnon, Alan G.; and Brode, Robert M.; deceased (by Brode, Joyce Wallis; executrix), to Foundation Equipment Corporation, The. Joint construction for sectional lead. 3,768,575, Cl. 173-43.000.
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Maes, Michel E.; and Abbott, Albert F., to Explosives Corporation of America. Cap sensitive ammonium nitrate-hydrazing-water-explosive. 3,768,410, Cl. 102-24.00r.
Maes, Michel E.; Friant, James E.; Abbott, Albert F.; and Steffey, James R., to Explosives Corporation of America. Safety blasting apparatus and method. 3,768,411, Cl. 102-24.00r.
Magerle, Otto, to Fa Tukien Trust. Apparatus for continuouly conveying semisolid material by the action of circulating squeeze rollers on a flexible conductor. 3,768,934, Cl. 417-477.000.
Magne, Frank C.: *See—*
Mod, Robert R.; Magne, Frank C.; and Skau, Evald L., 3,769,289.
Magnetic Electronics, Inc.: *See—*
Svalbe, John W., 3,769,609.
Magnusson, Gunnar Ivar Lennart, to Aktiebolaget Volvo. Steering device for buses. 3,768,825, Cl. 280-96.000.
Maguire, Richard J., to Gillette Company, The. Assembly apparatus. 3,768,135, Cl. 29-208.00d.
Mahogany Farms, Inc., mesne: *See—*
Garnett, Donald W., 3,769,036.
Maida, Osamu, to Nippon Kogaku K.K. Exposure determining device. 3,768,386, Cl. 95-10.0ce.
Maierson, Theodore; Powers, Edward M.; and Bowles, Thomas J., to National Cash Register Company, The. Process for producing liquid write crayon. 3,769,045, Cl. 106-19.000.
Maihart, Hans. Apparatus for producing tubular cylindrical bodies of hardenable molding compositions. 3,768,943, Cl. 425-224.000.
Makowski, Clement J.: *See—*
Pegg, Robert J.; and Makowski, Clement J., 3,768,926.
Malak, Thomas P.: *See—*
Durose, Arthur H.; and Malak, Thomas P., 3,769,179.
Malik, Oscar J., to Aeronics Corporation of America. Connector means for cables with semi-rigid sheaths. 3,769,444, Cl. 174-75.00c.
Mallech, Joseph W.: *See—*
Whalen, Mark E.; Trepanier, Norman W.; Kraus, Robert A.; and Mallech, Joseph W., 3,768,139.
Malmaison, Rueil: *See—*
Juguin, Bernard; Le Page, Jean Francois; Malmaison, Rueil; and Miquel, Jean, 3,769,239.
Malmin, Oscar. Air sterilizer and control means. 3,768,970, Cl. 21-74.00r.
Malone, Edward G.: *See—*
Inwood, Russell A.; Malone, Edward G.; and Van Asselt, Harold, 3,768,630.
Manetti, Mario: *See—*
Bruno, Edward C., 3,768,643.
Mangelsdorf, David H.: *See—*
Colman, Richard; and Mangelsdorf, David H., 3,768,100.
Mangiere, Richard John; Dwyer, Charles James; and Bressler, Magdalena Adriana. Dry powder for glazing foodstuffs. 3,769,027, Cl. 426-169.000.
Manjikian, Serop, to Universal Water Corporation. Method of producing semipermeable membrane elements. 3,769,128, Cl. 156-185.000.
Mann, Adriaan Barend; and Christianus, Jacobus Johannes, to Stichting Waterbonwkundig Laboratorium. Apparatus for taking an undisturbed soil sample. 3,768,580, Cl. 175-251.000.
Manz, Curtis T. Welder's helmet having upwardly sliding window. 3,768,099, Cl. 2-8.000.
Mappes, Robert W., to Matson Navigation Company. Container for elongated articles. 3,768,686, Cl. 220-1.500.
Marcor Housing Systems Incorporated: *See—*
Fuller, Walter Thomas, 3,768,221.
Marinace, John C., to International Business Machines Corporation. Method of forming ohmic contacts to semiconductors. 3,768,151, Cl. 29-590.000.
Markland, Richard D., to Consolidated Metco, Inc. Fuel heater. 3,768,454, Cl. 123-122.00e.
Markle, David A.; and Schlesinger, Eugene R., to Perkin-Elmer Corporation, The. Method and apparatus for sensing fluorescence radiation. 3,769,516, Cl. 250-363.000.
Markovitz, Mark; and Kohn, Leo S., to General Electric Company. Organostannoic acid and carboxylic acid anhydride reaction product epoxy curing agent. 3,769,226, Cl. 252-182.000.
Markowitz, Isral J., to Stem Development Corporation, mesne. Safety cover cap for an aerosol container or the like. 3,768,703, Cl. 222-182.000.
Marmon Group, Inc., The: *See—*
Long, John B., 3,768,574.
Marsee, Frederick J., to Ethyl Corporation. High velocity carburetor. 3,768,787, Cl. 261-23.00a.
Marsh, Richard P.; and Basso, Julius C. Device for forming and handling concrete pipe. 3,768,954, Cl. 425-451.000.
Marsh, William D.: *See—*
Coddington, David M.; and Marsh, William D., 3,769,122.
Martel, Leslie B.: *See—*
Deeg, Emil W.; and Martel, Leslie B., 3,768,992.
Martin, Alan. Manually operated mandrel rivet setting tool with lever throw adjustment. 3,768,297, Cl. 72-391.000.
Martin, Aubrey Wilfred, to Republic Rubber Industries (Proprietary) Limited. Retreading of tires. 3,769,121, Cl. 156-96.000.
Martin, Billy M.: *See—*
Sloan, Benjamin Johnston; Martin, Billy M.; Clevenger, Loyd H.; and Dunn, Roger S., 3,768,150.
Martin, James. Mechanism for the emergency opening or jettisoning of the hoods or canopies of vehicles. 3,768,759, Cl. 244-121.000.
Martin, Jon W.; and Bell, Jeffrey L., to TRW Inc. Composition of polyolefin rubber, 1,2-polybutadiene and a fluorinated polymer. 3,769,370, Cl. 260-889.000.
Martin Marietta Corporation: *See—*
Hise, Ralph E.; and Jordan, Russell T., 3,769,176.
Martin, Robert L.: *See—*
Ariyan, Zaven S.; and Martin, Robert L., 3,769,342.
Martin, Thomas W., Jr.: *See—*
Martin, Thomas W., Sr.; and Martin, Thomas W., Jr., 3,768,799.
Martin, Thomas W., Sr.; and Martin, Thomas W., Jr., to Cutters Machine Company, Inc. Catcher mechanism for cloth spreading machine. 3,768,799, Cl. 270-30.000.
Martin, William A.: *See—*
Valenta, Harry L., Jr.; Martin, William A.; and Metzger, Lenard M., 3,769,457.
Martincic, Paul W.: *See—*
Quirk, James F.; Martincic, Paul W.; and Friedrich, Kevin F., 3,769,447.
Martincic, Paul W.; and Moore, Curtis L., to Westinghouse Electric Corporation. Cast condenser bushing. 3,769,446, Cl. 174-143.000.
Martini, Leo A. Percussion drilling system. 3,768,576, Cl. 173-73.000.
Martini, Leonard J., to United States of America, Navy. Dye release apparatus. 3,768,436, Cl. 116-124.00b.
Martiniak, Leonard J., to General Electric Company. Compacting apparatus having means for releasing a compacted load therefrom. 3,768,399, Cl. 100-229.00a.

Martone, Ronald J.; Mueller, Peter G.; and Flis, Richard J., to Picker Corporation. Scintillation camera. 3,769,509, Cl. 250-367.000.

Martyn, Viktor Mikhailovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Baglai, Vitaly Mikhailovich; Tsukanov, Georgy Emmanuilovich; Bondarenko, Oleg Petrovich; Bogachenko, Alexei Georgievich; Stupak, Leonid Mikhailovich; Martyn, Viktor Mikhailovich; Shtanko, Jury Pavlovich and Pavlichuk, Georgy Anatolievich, 3,768,541.

Maruyama, Ikuo: *See—*
Kanetake, Norio; Maruyama, Ikuo; and Morita, Katsuyuki, 3,769,098.

Maruyama, Kunio: *See—*
Matsumura, Yasuo; and Maruyama, Kunio, 3,768,966.

Marvin, Edgar S.: *See—*
Jenkins, Gerald L.; Jungjohann, Vernon H.; Marvin, Edgar S.; and Seely, Neil G., 3,768,896.

Marwede, Gunter: *See—*
Graulich, Wilhelm; Beck, Manfred; Marwede, Gunter; and Theisen, Dieter, 3,769,369.

Marzocco, Alessandro, to SOCIMI-Societa Construzioni Industriali Milano S.p.A. Electromagnetic brake. 3,768,607, Cl. 188-165.000.

Masaki, Tatsuo: *See—*
Hanada, Hiroshi; Kitajima, Nobuo; and Masaki, Tatsuo, 3,769,010.

Maschinenfabrik Augsburg Nurnberg Aktiengesellschaft Werk Nurnberg: *See—*
Mayer, Karl, 3,768,335.

Maschinenfabrik Schweiter AG: *See—*
Koller, Emil, 3,768,745.

Maschmeyer, Dennis G.: *See—*
Weir, Donald Robert; Maschmeyer, Dennis G.; and Lavender, William J., 3,768,993.

Maska, Rudolf: *See—*
Anderson, Carl C.; Maska, Rudolf; and Das, Suryya K., 3,769,254.

Mason, Lawrence J., to Xerox Corporation. Projection assembly. 3,768,384, Cl. 95-45.000.

Mason, Vern K., to Berg, Edgar A. Ticket dispensing device. 3,768,354, Cl. 83-222.000.

Massachusetts Institute of Technology: *See—*
Nugent, John B., 3,768,656.
Thornton, Richard D.; and Kolm, Henry H., 3,768,417.

Massey, Eddie H , to Lilly, Eli, and Company. Bis-urea adducts of macrolide antibiotics. 3,769,273, Cl. 260-210.0ab.

Massey-Ferguson Inc.: *See—*
Heintz, Herman, 3,768,340.

Massie, Stephen N., to Universal Oil Products Company. Dimerization of styrene compounds. 3,769,359, Cl. 260-669.00p.

Mastner, Jiri: *See—*
Iten, Paul; Mastner, Jiri; and Mottier, Francois, 3,769,584.

Masuda, Katsutada; and Imashiro, Yoshio, to Takeda Chemical Industries, Ltd. N-acyl sydnonimine derivatives. 3,769,283, Cl. 260-247.20a.

Masuda, Kazuo, to Hayashibara Company. Process for the purification of amylases. 3,769,168, Cl. 195-66.00r.

Masui, Akira: *See—*
Ohkubo, Masuta; Imai, Ryoichiro; and Masui, Akira, 3,768,999.

Mateson, Jean F. Filter construction. 3,768,233, Cl. 55-100.000.

Mathews, Keith Franklin, to International Machines Corporation. Transistor switching circuit. 3,769,524, Cl. 307-215.000.

Mathorin, Edward Landais, to International Business Machines Corporation. Apparatus for clamping and centering a flexible magnetic disk. 3,768,815, Cl. 274-40.000.

Matson Navigation Company: *See—*
Mappes, Robert W., 3,768,686.

Matson, Robert Dale: *See—*
Willard, John Gordon; and Matson, Robert Dale, 3,769,220.

Matsubara, Hironaga, to Sumitomo Electric Industries, Ltd. Insulated cable having an insulating shielding layer. 3,769,085, Cl. 117-218.000.

Matsubara, Tetsujin: *See—*
Sugano, Izuru; Kenmoku, Yoshihiro; Akashi, Tsuneo; Matsubara, Tetsujin; and Okuda, Taneaki, 3,769,219.

Matsukawa, Hiroharu: *See—*
Ishige, Sadao; Hayashi, Takao; and Matsukawa, Hiroharu, 3,769,062.

Matsukawa, Hiroharu; Saeki, Keiso; and Shimada, Takeo, to Fuji Photo Film Co., Ltd. Process for preparing microcapsules containing hydrophobic oil drops. 3,769,231, Cl. 252-316.000.

Matsumura, Yasuo; and Maruyama, Kunio, to Japan Exlan Company, Limited. Process for producing lactonized acrylic fibers. 3,768,966, Cl. 8-115.700.

Matsuo, Yoshio; and Sugimoto, Shigetoki, to Nippon Electric Company, Limited. Synchronizing system for phase-modulation telecommunication system. 3,769,587, Cl. 325-320.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Ouchi, Hiromu; Nishida, Masamitsu; and Nagano, Katsuo, 3,769,218.

Matsushita Electric Works, Ltd.: *See—*
Kusunoki, Toshio, 3,768,483.

Matsuura, Mutsuhiko: *See—*
Osawa, Kiyoyasu; and Matsuura, Mutsuhiko, 3,768,890.

Mattel, Inc.: *See—*
Hill, Allen D.; Larsson, Ake L.; and Rich, Hubert A., 3,768,175.

Matteo, Nicholas J., to Eaton Corporation. Steering axle. 3,768,585, Cl. 180-79.20r.

Matthaei, Raymond George, to Lever Brothers Company. Process for producing marbleized soap. 3,769,225, Cl. 252-134.000.

Matuschke, Walter. Frequency carrier molding apparatus. 3,768,946, Cl. 425-363.000.

Mayadas, Ashok F.: *See—*
Freedman, James F.; Henry, George R.; Mayadas, Ashok F.; and Shatzkes, Morris, 3,769,618.

Mayer, Ferdy. Parametric device for multiplying frequencies. 3,769,597, Cl. 328-160.000.

Mayer, Karl, to Maschinenfabrik Augsburg Nurnberg Aktiengesellschaft Werk Nurnberg. Crankshaft composed of a plurality of sections welded together. 3,768,335, Cl. 74-597.000.

Mayer, William R.: *See—*
Little, Arthur J.; and Mayer, William R., 3,768,158.

Maynard, George A., to Textron, Inc. Nail package improvements for interconnecting the trailing nail of one nail package with the leading nail of another nail package. 3,768,124, Cl. 24-81.0cc.

Maynard, Kenneth B.; and Paulson, Thomas M., to International Business Machines Corporation. Apparatus and method for making multiple ply sets. 3,768,801, Cl. 270-53.000.

Mayo, William E.; and Gottlieb, Joel B., to M & T Chemicals Inc. Vinyl halide polymers stabilized with two organotin compounds. 3,769,263, Cl. 260-45.75k.

Mayr, Helmut; Huber, Theodor; and Pelte, Richard, to Agfa-Gevaert AG. Automatic diaphragm control circuit for a motion picture camera. 3,768,893, Cl. 352-91.000.

Mc Bride, Morris M. Mat cutting apparatus. 3,768,357, Cl. 83-438.000.

Mc Culloch Corporation: *See—*
Frederickson, Robert Eugene, 3,768,611.

Mc Mahon, Roy C., to Electrostatic Equipment Co. Method of removing oil from engine coolant. 3,769,188, Cl. 204-186.000.

McCanse, James E.; Faber, Frederick L.; and Bauer, Ivan E., to Hesston Corporation. Structure for eliminating mud collections in farm implements. 3,768,572, Cl. 172-112.000.

McClenahan, Robert W., to Leeds & Northrup Company. Printing element for multi-point recorders. 3,769,626, Cl. 346-61.000.

McClure, John L.: *See—*
Preher, John L.; and McClure, John L., 3,768,742.

McColl, Bruce J., to Owens-Illinois, Inc. Roundwood stump processor. 3,768,529, Cl. 174-309.0ac.

McCormick, Harold E., to Ramsey Corporation Combination apex and side seals for rotary piston engines. 3,768,93c , Cl. 418-142.000.

McCracken, Ivan H.: *See—*
Betz, Carl R.; and McCracken, Ivan H., 3,768,393.

McDaniel, Carl V.: *See—*
Rundell, Clark A.; and McDaniel, Carl V., 3,769,386.

McDonell, John W.: *See—*
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McDonnell Douglas Corporation: *See—*
Holmes, Richard N.; and Dobbs, Richard A., 3,769,142.
Toy, Stephen M., 3,768,975.

McDonough, Thomas B., to GTE Sylvania Incorporated. Selective actuating mechanism for percussive photoflash lamp array. 3,769,501, Cl. 240-1.300.

McDougal, Harmon A.: *See—*
Wiley, Daniel E.; McDougal, Harmon A.; and Turner, Allan L., 3,768,551.

McEntee, Harry R.: *See—*
Viego, Armando G.; and McEntee, Harry R., 3,769,310.

McEvoy, William J. Fast averaging noise summing circuit for automatic signal detection. 3,769,601, Cl. 329-110.000.

McFee, James Hoffman: *See—*
Ashkin, Arthur; Bergman, John George, Jr.; and McFee, James Hoffman, 3,769,096.

McGettigan, Marian M.: *See—*
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McGibbon, Verdun R.: *See—*
Walters, Joseph J.; and McGibbon, Verdun R., 3,769,097.

McGill, Howard L., to Schlumberger Technology Corporation. High/low flow safety valve. 3,768,506, Cl. 137-458.000.

McGraw-Edison Company: *See—*
Lay, Michael T., 3,769,473.
Miller, John J.; and Vesper, George J., 3,768,282.
Schmidt, Jacob E., 3,769,095.

McKittrick, Clarence: *See—*
Cowles, Tommie; and McKittrick, Clarence, 3,768,780.

McLaughlin, James H., to Universal Oil Products Company. Reactant ratio control process. 3,768,955, Cl. 431-12.000.

McLintic, William James, to Thorn Lighting Limited. Slide projectors. 3,768,900, Cl. 353-98.000.

McMahon, Krouse S.: *See—*
Eubanks, Lloyd S.; McMahon, Krouse S.; Payne, John T.; and Rosenberger, Frederick E., 3,769,177.

McManus, James M.; and Miller, Max W., to Pfizer Inc. Substituted aminomethylcarbazoles. 3,769,298, Cl. 260-315.000.

McMillen, Kenneth G.; deceased (by McMillen, Leanne S.; administratrix), to Borg-Warner Corporation. Control arrangement for hydraulic systems. 3,768,372, Cl. 91-412.000.

McMillen, Leanne S.: *See—*
McMillen, Kenneth G., 3,768,372.

McNeil Corporation: *See—*
Pamer, Karl A., 3,768,666.

McNinch, Joseph H., Jr.: *See—*
Urban, John A.; and McNinch, Joseph H., Jr., 3,768,872.

McSwain, Thad M. Retractible canopy shelter. 3,768,540, Cl. 160-23.00r.

McSwiggin, Joseph R., to Procter & Gamble Company, The. Light-milled roast and ground coffee. 3,769,031, Cl. 426-148.000.

Mead Corporation, The: *See—*
Bliss, Norman G.; and Wright, Robert T., 3,768,997.

Mead, Louis W.; and Deutsch, Marshall F., to Sherrod Drywall, Inc. Apparatus for measuring the amount of a component in a biological fluid. 3,768,979, Cl. 23-259.000.

Mechtron International Corporation: *See—*
Hage, William T., 3,768,424.

Medical Supply Company: *See—*
Avery, Carl F., 3,768,916.

Medovar, Boris Izrailevich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Baglai, Vitaly Mikhailovich; Tsukanov, Georgy Emmanuilovich; Bondarenko, Oleg Petrovich; Bogachenko, Alexei Georgievich; Stupak, Leonid Mikhailovich; Martyn, Viktor Mikhailovich; Shtanko, Jury Pavlovich and Pavliichuk, Georgy Anatolievich, 3,768,541.

Mehta, Robert, to Jeumont-Schneider. Static switching system for instantaneous changeover an electric machine. 3,769,566, Cl. 318-375.000.

Meiken Kagakukogyo Kabushiki Kaisha: *See—*
Kizawa, Kango, 3,769,063.

Meinzer, Lester N.: *See—*
Walker, Grant W.; Ford, Duane B.; Meinzer, Lester N.; and Larsen, Reid S., 3,768,781.

Meisert, Ernst: *See—*
Grogler, Gerhard; Kallert, Wilhelm; and Meisert, Ernst, 3,769,265.

Memorex Corporation, mesne: *See—*
Applequist, James E.; Johnson, James E.; Akers, Clifford B.; Daniels, Donald V.; James, Richard N.; Roberts, Daniel M.; and Guzy, Darrel James, 3,768,714.

Memphis Furniture Manufacturing Co.: *See—*
Gilliland, James Harold, 3,768,845.

Menary, Robert F., to Paulmar, Incorporated. Automatic threading film reel. 3,768,750, Cl. 242-74.200.

Mentrup, Anton: *See—*
Schromm, Kurt; Mentrup, Anton; Zeile, Karl; Renth, Ernst-Otto; Engelhardt, Albrecht; and Traunecker, Werner, 3,769,430.

Menz, Frederic L.; and Redmond, Stephen L., to United States of America, Navy. Binary explosive logic network. 3,768,409, Cl. 102-22.000.

Menzi, Ernst, to Menzi, Ernst, AG. Vehicular excavating apparatus. 3,768,674, Cl. 214-132.000.

Menzi, Ernst, AG: *See—*
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Merck & Co., Inc.: *See—*
Bayne, Gilbert M., 3,769,424.
Birnbaum, Jerome; and Inamine, Edward, 3,769,169.
Kollonitsch, Janos; and Gal, George, 3,769,364.
Kuo, Chan Hwa; Taub, David; and Wendler, Norman L., 3,769,306.

Mesek, Frederick K.; and Repke, Virginia L., to Johnson & Johnson. Disposable diaper. 3,768,480, Cl. 128-287.000.

Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
Butter, Karl; Kaufmann, Michael; and Dederra, Helmut, 3,768,256.

Messick, Richard A. Lathe improvements. 3,768,527, Cl. 142-38.000.

Metaframe Corporation: *See—*
London, S. Paul, 3,768,193.

Metallurgical Processes Limited: *See—*
Benatt, Frank George Simon; and Linton, Walter Lindsay, 3,768,792.

Metz, Paul, to ARBED Acieries Reunies de Burbach-Eich-Dudelange, S.A. Granular additive for electrorefining of steel. 3,768,996, Cl. 75-10.00r.

Metzger, Lenard M.: *See—*
Valenta, Harry L., Jr.; Martin, William A.; and Metzger, Lenard M., 3,769,457.

Metzler, Robert H.; and Zurek, Jerome N., to Stewart-Warner Corporation. Modular gauge housing. 3,768,314, Cl. 73-432.0ad.

Meulemans, Charles Cornelis Eduard: *See—*
van der Tas, Johannes Cornelis; and Meulemans, Charles Cornelis Eduard, 3,768,957.

Meyer, Christoph P.; Meyer, Darby N.; and Meyer, Stephen T. Air filter and deflector with enclosed magnet mounts. 3,768,235, Cl. 55-385.000.

Meyer, Darby N.: *See—*
Meyer, Christoph P.; Meyer, Darby N.; and Meyer, Stephen T., 3,768,235.

Meyer, Stephen T.: *See—*
Meyer, Christoph P.; Meyer, Darby N.; and Meyer, Stephen T., 3,768,235.

Meyers, Cornelius B.; and Miolla, Ralph J., Jr., to Schumacher, Harold F.; executor of the estate of said Meyers, Cornelius B., 3/9 to said Miolla, Ralph J., Jr., 4/9 to Hooning, Carol J. Vander, 1/9 to Pasma, Lois and 1/9 to Wagemaker, Herbert, Jr. Anti-colic feeding device. 3,768,682, Cl. 215-11.00r.

Meyers, Robert A., to TRW Inc. Removal of pyritic sulfur from coal using solutions containing ferric ions. 3,768,988, Cl. 44-1.00r.

Meyers, Robert L., to Bendix Corporation, The. Vehicle hydraulic brake system. 3,768,871, Cl. 303-9.000.

Michaelson, Joseph B. Method of treating aqueous liquids to reduce oxidative and reductive potential thereof. 3,769,228, Cl. 252-188.30r.

Michelson, Gajus: *See—*
Michelson, Gunnar P.; Michelson, Gajus; Michelson, Wolf; and Valliant, William W., 3,768,906.

Michelson, Gunnar P.; Michelson, Gajus; Michelson, Wolf; and Valliant, William W., to Producers Service Corporation. Method and apparatus for printing and processing thermal film. 3,768,906, Cl. 355-132.000.

Michelson, Wolf: *See—*
Michelson, Gunnar P.; Michelson, Gajus; Michelson, Wolf; and Valliant, William W., 3,768,906.

Michigan Carton Co.: *See—*
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Microfab Systems Corporation: *See—*
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Micron Instruments, Inc.: *See—*
Myhre, Kjell E., 3,769,110.

Microsystems International Limited: *See—*
Foss, Richard C.; and Spittle, Walter, 3,769,525.

Midland-Ross Corporation: *See—*
Hemsath, Klaus H.; and Wright, Dale E., 3,768,961.

Miller, Charles G., to California Institute of Technology. Purging means and method for xenon arc lamps. 3,769,544, Cl. 313-175.000.

Miller, Clarence R., to Tenneco Inc. Drain valve for fuel filter. 3,768,659, Cl. 210-313.000.

Miller, Donald F., to Du Pont de Nemours, E. I., and Company. Air-laydown apparatus for producing webs for nonwoven fabric. 3,768,120, Cl. 19-156.300.

Miller, Herman, Inc.: *See—*
Propst, Robert L.; and Kelly, James O., 3,768,116.

Miller, John J.; and Vesper, George J., to McGraw-Edison Company. Slant mounted laundry machine. 3,768,282, Cl. 68-146.000.

Miller, Max W.: *See—*
McManus, James M.; and Miller, Max W., 3,769,298.

Miller, Walter L. Wedging action cup dispenser. 3,768,694, Cl. 221-221.000.

Miller, Wendell E.; and Johnson, Raymond E., to Borg-Warner Corporation. Pump control system. 3,768,928, Cl. 417-213.000.

Miller, William. Razor with lubricant dispenser. 3,768,161, Cl. 30-41.000.

Mills, Archie W. Food grinder. 3,768,741, Cl. 241-82.100.

Mills, George J.: *See—*
Ang, Choh-Yi; and Mills, George J., 3,769,619.

Millward, John David, to Decca Limited. Synchronising systems. 3,769,574, Cl. 323-101.000.

Milner, John Kendell, to Brown and Williamson Tobacco Corporation. Cutting devices. 3,768,353, Cl. 83-161.000.

Minegishi, Hiroshi, to Nippon Piston Ring Co., Ltd. Spring ring for a piston ring assembly. 3,768,818, Cl. 267-1.500.

Mink, George, to VSI Corporation. Planetary head forming tool. 3,768,289, Cl. 72-67.000.

Minnesota Mining and Manufacturing Company: *See—*
Trancik, Ronald J., 3,769,071.
Wiese, Joseph A., Jr.; Van Dyke Tiers, George; and Rathmann, George B., 3,769,019.

Minolta Camera Kabushiki Kaisha: *See—*
Kobori, Toshio, 3,768,390.

Minolta Camera K.K.: *See—*
Nishino, Hisashi; Hosokawa, Teruo; and Hioki, Ikuo, 3,768,888.

Miolla, Ralph J., Jr.: *See—*
Meyers, Cornelius B.; and Miolla, Ralph J., Jr., 3,768,682.

Miquel, Jean: *See—*
Juguin, Bernard; Le Page, Jean Francois; Malmaison, Rueil; and Miquel, Jean, 3,769,239.

Misitano, Santi F.: *See—*
Sprinkle, James K.; and Misitano, Santi F., 3,769,046.

Missimer, Dale J., to Gulf & Western Industries, Inc. Self-balancing low temperature refrigeration system. 3,768,273, Cl. 62-84.000.

Mita Industrial Company, Limited: *See—*
Yokoyama, Taizo, 3,769,013.

Mitchell, William A.; and Seidel, William C., to General Foods Corporation. Fat sponge. 3,769,038, Cl. 426-363.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
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Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
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Miyakawa, Seinan; and Noda, Nobuhiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electric camera shutter with light responsive controls. 3,768,391, Cl. 95-64.00b.

Miyake, Shin Ichi; and Sakai, Kazunari, to Kyoto Ceramic Co., Ltd. Hermetic ceramic power package for high frequency solid state device. 3,769,560, Cl. 317-234.00r.

Miyazaki, Koshin: *See—*
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Mizell, Louis R.; and Schur, Mary S., to I.W.S. Nominee Company, Limited. Production of embossed fibrous sheets. 3,769,119, Cl. 156-83.000.

Mizen, Walter J.; Lewis, Richard L.; and Hendrickson, Richard T., to Bendix Corporation, The. Surge brake with solenoid-actuated master cylinder lock and emergency release. 3,768,606, Cl. 188-112.000.

Mizuki, Eiichi: *See—*
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Molloy, Bryan B.; and Tuttle, Ronald R., to Lilly, Eli, and Company. Anti-arrythmic agent. 3,769,426, Cl. 424-321.000.

Molnlycke AG Golebargsvagen: *See—*
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Mongelli, Massimo; and Vinciguerra, Ruggero, to Archibernetica S.r.l. Shutting and opening device, particularly for doors. 3,768,207, Cl. 49-503.000.

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Moore, Arthur Ronald. Device for sorting carpet rolls. 3,768,669, Cl. 214-64.000.

Moore, Curtis L.: *See—*
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Moreau, Jerry P.; Drake, George L., Jr.; and Reeves, Wilson A., to United States of America, Agriculture. Fluoroamide-amino polymers and process for imparting oleophobic yet hydrophilic properties to fibrous materials. 3,769,307, Cl. 260-404.500.

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Morita, Katsuyuki: *See—*
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Moriyama, Yasuhiro; and Okamoto, Takafumi, to Nitto Electric Industrial Co., Ltd. Method for preparing laminated film of polymeric substances. 3,769,137, Cl. 156-309.000.

Morse, Robert J., to Bendix Corporation, The. Modulator for adaptive braking system. 3,768,519, Cl. 137-627.500.

Moss, Louie W., to Drydock Trailers, Inc. Boat trailer. 3,768,677, Cl. 214-506.000.

Moteren- und Turbinen-Union Friedrichshafen GmbH: *See—*
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Mueller, William Lynn. Emergency gas shut-off valve. 3,768,497, Cl. 137-38.000.

Mukai, Yoku, to Kyoeisha Yushi Kagaku Kogyo Co., Ltd. Process for producing bis-alpha-methylbenzyl ether. 3,769,351, Cl. 260-611.00a.

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Murray, Harry E. Weedless basket plug. 3,768,194, Cl. 43-42.100.

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Myers, William P., to Bendix Corporation, The. Indicator for volume ventilator apparatus. 3,768,469, Cl. 128-145.800.

Myhre, Kjell E., to Micron Instruments, Inc. Diaphragm for low-pressure transducers. 3,769,110, Cl. 156-6.000.

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Naka, Hiromitsu. Indoor escape device. 3,768,593, Cl. 182-77.000.

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Nathan, David L., to Opticase, Inc. Contact lens case. 3,768,633, Cl. 206-5.00a.

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Niffenegger, Paul J.; and Freimark, Ronald J., to Motorola, Inc. Single volume and tone control for multi-channel audio systems. 3,769,459, Cl. 179-1.0vl.
Nigro, Louis V., to Gillette Company, The. Pressurized dispensing package. 3,768,707, Cl. 222-402.130.
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Nikles, Otho Leroy, Jr., to Resyn Corporation. Epoxy hydraulic cement composition. 3,769,250, Cl. 260-29.2ep.
Nilsson, Lars-Guran Bernhard; and Tykesson, Bengt Jorgen Tyke, said Nilsson assor. to said Bostedt, Jan Einar. Loudspeaker. 3,768,589, Cl. 181-31.00b.
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Olin, John F., to Monsanto Company. Herbicidal-N-(acyl-tertiary-amidoalkyl)anilides. 3,769,301, Cl. 260-326.450.
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Olive-Jones, Michael William; and Randall, Douglas Raymond, to BTR Industries Limited. Swaging apparatus. 3,768,298, Cl. 72-402.000.
Olivetti, Ing., C., & C., S.p.A.: *See—*
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Olivier, Kenneth L.; and Block, Michael J., to Union Oil Company of California. Oxidation of hydrogen cyanide to cyanogen in a liquid medium containing a soluble nitrate salt or nitric acid. 3,769,388, Cl. 423-384.000.
Olson, John E.; and Waller, Glenn A., to Hyster Company. Hydraulic control system for two-speed winch. 3,768,263, Cl. 60-425.000.
Olympus Optical Co., Ltd.: *See—*
Sato, Masaaki, 3,768,814.
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O'Neill, Charles Edward; Warner, John Stuart; and Bell, Malcolm Charles Evert, to International Nickel Company, Inc., The. Reduction of nickel and cobaltoxides in a molten metal bath of controlled oxygen content. 3,769,002, Cl. 75-82.000.
O'Neill, Gerald J.; and Simons, Charles W., to Grace, W. R., & Co. Methlycyclopropanes as inhalation anesthetics. 3,769,429, Cl. 424-352.000.
Ono, Yoichi; Ogirima, Masahiko; Kasano, Hiroyuki; and Kurata, Kazuhiro, to Hitachi, Ltd. Method of preventing autodoping during the epitaxial growth of compound semiconductors from the vapor phase. 3,769,104, Cl. 148-175.000.
Oomen, Joris Jan Cornelis; Romeijn, Frans Cornelis; and Schwandt, Gunther, to U.S. Philips Corporation. Primary Electrochemical cell. 3,769,089, Cl. 136-83.00r.
Ooya, Junichiro; Takayama, Katsuki; and Kuwa[illegible]azutaka, to Aisin Seiki Kabushiki Kaisha. Process and circuit arra[illegible]ment for the discrimination of mutual revolutional speeds of a plurality of revolving members. 3,769,595, Cl. 328-133.000.
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Court, Patrick R. J., 3,769,448.
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Orfei, John B., to American Science & Engineering, Inc. Electric heating device. 3,769,495, Cl. 219-433.000.
Organisation Europeanne de Recherches Spatiales: *See—*
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Orme, Myrl L., to Bendix Corporation, The. Fail-safe servo control valve. 3,768,376, Cl. 91-466.000.
Ort, Wolfgang: *See—*
Ettischer, Helmut; Ort, Wolfgang; Simon, Horst; and Steisslinger, Kurt, 3,768,389.
Ort, Wolfgang, to Eastman Kodak Company. Device for picking up slides. 3,768,901, Cl. 353-103.000.
Osawa, Kiyoyasu; and Matsuura, Mutsuhiko, to Nippon Kogaku K.K. Internal Focusing wide angle eyepiece. 3,768,890, Cl. 350-220.000.
Osborne, Albert. Vaginal-anal applicator. 3,768,475, Cl. 128-225.000.
Osborne, Thomas E., to Hewlett-Packard Company. Calculator with provision for automatically interposing memory access cycles between otherwise regularly recurring logic cycles. 3,769,621, Cl. 340-172.000.
Osiecki, Jeanne Helen: *See—*
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Ostrowski, Arthur E., to Allied Tube & Conduit Corporation. Method of in line coating of galvanized tubing. 3,768,145, Cl. 29-458.000.
Otsuka, Shin-Ichiro: *See—*
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Padeh, Slomo J. Jewelry or tooth-crown molding device. 3,768,544 Cl. 164-376.000.
Padmanathan, Thurairajah, to American Cyanamid Company. 1,3,2-Oxazaborinides and method for preparing the same. 3,769,300, Cl. 260-326.210.
Pagnotta, Gasper; Kiesler, A. James; and Moffatt, William G., to General Electric Company. Method of joining print characters to high speed printer fingers. 3,768,148, Cl. 29-471.700.
Palma, James R. Separator. 3,768,658, Cl. 210-304.000.
Palmer Fluid Controls, Inc.: *See—*
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Pamer, Karl A., to McNeil Corporation. Telescoping-type stacker crane. 3,768,666, Cl. 212-128.000.
Pampus, Gottfried: *See—*

Weisbeck, Ronald; Pampus, Gottfried; Suling, Carlhans; and Preis, Lothar, 3,769,390.

Pan Nova, Inc.: *See*—
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Panzer, Hans P.; Yare, Robert S.; and Forber, Malcolm R., to General Foods Corporation. Green bean decaffeination employing fluorinated hydrocarbons. 3,769,033, Cl. 426-428.000.

Panzer, Norman. Surgical speculum. 3,768,460, Cl. 128-17.000.

Papst-Motoren KG: *See*—
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Pardue, Von G., to I-T-E Imperial Corporation. Ground fault indicator. 3,769,548, Cl. 317-18.00d.

Parker, George, to Lilly Industries, Limited. Process for acylation of cephalosporin esters. 3,769,280, Cl. 260-243.00c.

Parker, William Lawrence; and Neidleman, Saul Lewis, to Squibb, E. R., & Sons, Inc. 2-Oxo-1 (2H)pyridinecarbonitrile and substituted derivatives thereof. 3,769,291, Cl. 260-296.00r.

Parmenter, Alan David: *See*—
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Pasma, Lois: *See*—
Meyers, Cornelius B.; and Miolla, Ralph J., Jr., 3,768,682.

Passera, Franco Ugo. Spring or frictional push pull type exercising device. 3,768,808, Cl. 272-80.000.

Patel, Janyantilal M.: *See*—
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Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Baglai, Vitaly Mikhailovich; Tsukanov, Georgy Emmanuilovich; Bondarenko, Oleg Petrovich; Bogachenko, Alexei Georgievich; Stupak, Leonid Mikhailovich; Martyn, Viktor Mikhailovich; Shtanko, Jury Pavlovich and Pavliichuk, Georgy Anatolievich. Process and plant for electroslag remelting of consumable electrodes. 3,768,541, Cl. 164-52.000.

Paulik, Frank E.; Hershman, Arnold; Roth, James F.; and Knox, Walter K., to Monsanto Company. Production of carboxylic acids and esters. 3,769,324, Cl. 260-476.00r.

Paulik, Frank E.; Hershman, Arnold; Roth, James F.; and Knox, Walter R., to Monsanto Company. Production of carboxylic acids and esters. 3,769,326, Cl. 260-476.00r.

Paulik, Frank E.; Hershman, Arnold; Knox, Walter R.; and Roth, James F., to Monsanto Company. Production of carboxylic acids and esters. 3,769,329, Cl. 260-488.00k.

Pauliukonis, Richard S. Solenoid operated simple control valves. 3,768,517, Cl. 137-625.650.

Paulmar, Incorporated: *See*—
Menary, Robert F., 3,768,750.

Paulson, Thomas M.: *See*—
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Paumier, Inc.: *See*—
Paumier, Thomas B.; Bulso, Joseph D., Jr.; and Lewers, William R., 3,768,667.

Paumier, Thomas B.; Bulso, Joseph D., Jr.; and Lewers, William R., to Paumier, Inc. Workpiece transfer mechanism. 3,768,667, Cl. 214-1.0bb.

Paustian, John E., to Thiokol Chemical Corporation. Anhydrous hydrazinium diperchlorate preparation. 3,769,389, Cl. 423-386.000.

Pavliichuk, Georgy Anatolievich: *See*—
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Baglai, Vitaly Mikhailovich; Tsukanov, Georgy Emmanuilovich; Bondarenko, Oleg Petrovich; Bogachenko, Alexei Georgievich; Stupak, Leonid Mikhailovich; Martyn, Viktor Mikhailovich; Shtanko, Jury Pavlovich and Pavliichuk, Georgy Anatolievich, 3,768,541.

Payne, John T.: *See*—
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Peake, Clinton Joseph, to FMC Corporation. 1,2-Dibromo-1-cyclohexyl-2-nitroethane. 3,769,354, Cl. 260-644.000.

Pearce, Francis Preston, to Airpel Limited of Airpel Works. Filters. 3,768,654, Cl. 210-232.000.

Pearson, R. A., Company: *See*—
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Pearson, Rune S. Method and apparatus for controllably and sequentially dispensing articles, one at a time. 3,768,695, Cl. 221-227.000.

Pearson, Tillmon H.: *See*—
Dagani, Michael J.; and Pearson, Tillmon H., 3,769,338.

Pearson, Tillmon H.; and Nelson, Gunner E., to Ethyl Corporation. Detergent formulations. 3,769,223, Cl. 252-89.000.

Pecher, Wolfgang; and Frisch, Juergen. Electronic flash device. 3,769,546, Cl. 315-241.00p.

Pechko, Mikhail Alexeevich; Ivnitsky, Boris Yakovlevich; Blagov, Eduard Evenievich; Filatov, Ivan Grigorievich; Ustinov, Evgeny Ivanovich; Rozhkov, Sergei Iosifovich; Belov, Viktor Konstantinovich; and Gruzdev, Nikolai Viktorovich. Installation for testing-pressure tightness of check valve closing element. 3,768,305, Cl. 73-45.500.

Peckinpaugh, Ralph L.: *See*—
Shafer, James A., 3,768,420.

Peersch, George H., to Bendix Corporation, The. Oscillation detection circuit. 3,769,596, Cl. 328-138.000.

Pegg, Robert J.; and Makowski, Clement J. Pulse jet rotor drive for helicopter. 3,768,926, Cl. 416-21.000.

Pelte, Richard: *See*—
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Pemberton, J. C.: *See*—
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Pennachetti, John T.; and Boux, Joseph F., to Enercon International, Limited. Process for the treatment of fly ash. 3,769,053, Cl. 106-288.00b.

Pennachetti, John T.; and Boux, Joseph F., to Enercon International, Limited. Process for the treatment of fly ash. 3,769,054, Cl. 106-288.00b.

Pennwalt Corporation: *See*—
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Pennycook, James: *See*—
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Perkin-Elmer Corporation, The: *See*—
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Markle, David A.; and Schlesinger, Eugene R., 3,769,516.

Perry, Clark William, to Hoffmann-La Roche Inc. Method for making 2,3-dimethyl-1,4-bis-(3, 4-hydrocarbonyloxyphenyl)-1,4-butanedione. 3,769,350, Cl. 260-592.000.

Perry, Roger L., to Gillette Company, The. Razor handle. 3,768,162, Cl. 30-47.000.

Persinski, Leonard John; and Boothe, Jerry Emile, to Calgon Corporation. Friction reducing. 3,768,565, Cl. 166-308.000.

Personnic, Marcel: *See*—
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Peterson, Robert S., to Westinghouse Electric Corporation. Interstand tension regulator for a multistand rolling mill. 3,768,286, Cl. 72-9.000.

Petropoulos, John Christos: *See*—
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Petrov, Gennady Nikolaevich: *See*—
Nametkin, Nikolai Sergeevich; Durgarian, Sergei Garievich; Kopkov, Vadim Ivanovich; Khotimsky, Valery Samuilovich; Bryantseva, Irina Sergeevna; Petrov, Gennady Nikolaevich; Tolstopyatov, Gennady Mikhailovich; Stadnichuk, Tatyana Validimirovna; Kornilova, Ttyana Alexeevna; and Sholkhet, Anna Berkovna, 3,769,266.

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Peyrot, Jean, to Compagnie Francaise de Raffinage. Grafted copolymer with two sequences of recurring units and methods of producing same. 3,769,368, Cl. 260-877.000.

Pfadenhauer, Dieter: *See*—
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Pfefer, Irving. Bulk film loader. 3,768,748, Cl. 242-71.700.

Pfiffner, Albert: *See*—
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Phillips Petroleum Company: *See*—
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Phillips Petroleum Company, mesne: *See*—
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Piccard, Lucien, Industries, Inc.: *See*—
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Picken, James B. Underwater swimming aid. 3,768,431, Cl. 115-22.300.

Picker Corporation: *See*—
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Martone, Ronald J.; Mueller, Peter G.; and Flis, Richard J., 3,769,509.

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Pieper, Rudolf: *See*—
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Pierzchala, Chester E.; and Klayum, Milton A., to Reliable Electric Company. Buried-type splice case. 3,769,443, Cl. 174-38.000.

Pieters, Richard, to U.S. Philips Corporation. Flyback EHT and sawtooth current generator having a flyback period of at least sixth order. 3,769,542, Cl. 315-27.0td.

Pietkiewicz, Charles J., Jr., to Hayes-Albion Corporation. Method of making cross blade cooling fans. 3,768,153, Cl. 29-400.00b.

Pifferi, Giorgio, to I.S.F. S.p.A. Antihypertensive 6-substituted 3-hydrazino-pyridazines and their preparation. 3,769,278, Cl. 260-240.00g.

Pilaro, Joseph F., to National Distillers and Chemical Corporation. Breathable, sterilizable and peelable pouch and method of manufacture thereof. 3,768,725, Cl. 229-66.000.

Piller, Alvin J.: *See—*
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Pillsbury Company, The: *See—*
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Pinter, John K., to American Reflector Co., Inc. Reflective marker device. 3,768,434, Cl. 116-63.000.

Pioneer Magnetics, Inc.: *See—*
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Piscatelli, Andrew. Novel cloth winding board. 3,768,640, Cl. 206-50.000.

Pitel, Guy Bernard, to Societe d'Etudes Scientifiques et Industrielles de l'Ile-de-France. Injectable 3-hydroxy-pregnane-11,20-dione anesthetic compositions. 3,769,421, Cl. 424-243.000.

Pitsch, Ronald D., to White Farm Equipment Company. Draft responsive three-point hitch. 3,768,568, Cl. 172-7.000.

Pittet, Alan O.; and Hruza, Denis E., to International Flavors & Fragrances Inc. Substituted thiazoles in flavoring processes and products produced thereby. 3,769,040, Cl. 426-65.000.

Pitts, Thomas E.: *See—*
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Planica, Jan: *See—*
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Plank, Charles J.; and Rosinski, Edward J., to Mobil Oil Corporation. Catalytic conversion of hydrocarbons. 3,769,202, Cl. 208-111.000.

Plasser, Franz; and Theurer, Josef. Mobile track gage measuring apparatus. 3,768,168, Cl. 33-144.000.

Plattner, Robert F., to Interlake, Inc. Strapping machine. 3,768,397, Cl. 100-30.000.

Plenty & Son Limited: *See—*
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Pneumatic Scale Corporation: *See—*
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Polar Corporation: *See—*
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Clark, Charles T., Jr., 3,769,515.

Polaroid Corporation: *See—*
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Polcha, Raymond J., to United States of America, Navy. Controlled fragment warhead. 3,768,414, Cl. 102-67.000.

Poligrat Corporation: *See—*
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Pollak, Kurt, to Wean United, Inc. Method and apparatus for pressing and identing a workpiece. 3,768,296, Cl. 72-377.000.

Pommerening, Uwe A.: *See—*
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Pons, Amedee. Mechanism for lowering and raising clockwork parts into and out of a working vat. 3,768,320, Cl. 74-53.000.

Ponzetti, William John: *See—*
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Portec, Inc.: *See—*
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Porter, H. K., Company, Inc.: *See—*
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Portmann, Hubert F., to Compagnie des Montres Longines. Watch or clock cover glass including a liquid display device. 3,768,887, Cl. 350-160.01c.

Posdal, Robert J. Surgical towel clip. 3,768,126, Cl. 24-259.0fc.

Potter, Richard C.: *See—*
Smith, Ronald S.; Kuderna, Jerome C., Jr.; and Potter, Richard C., 3,769,416.

Pour-El, Akiva; and Reddy, Gollamudi Venka, to Archer Daniels Midland Company. Preparation of alcoholic beverages from oil seed whey. 3,769,437, Cl. 426-11.000.

Powe, Wilbert C.: *See—*
Woodford, Charles E.; and Powe, Wilbert C., 3,768,179.

Powell, Patrick L., to Stewart-Warner Corporation. Speedometer and odometer assembly. 3,768,315, Cl. 73-490.000.

Powell, Russell A., to Koppers Company, Inc. Hot blast valve seat. 3,768,502, Cl. 137-340.000.

Powelson, Douglas V. N.: *See—*
Byrne, Michael F.; and Powelson, Douglas V. N., 3,768,841.

Powers, Al, to Nippon Rubber U.S.A. Corporation. Soft and securely held shoe. 3,768,182, Cl. 36-2.50a.

Powers, Edward M.: *See—*
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Powlesland Engineering Limited: *See—*
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Powlesland, John W., to Powlesland Engineering Limited. Device for producing dynamic flow in fluids to form curtains of the fluid. 3,768,394, Cl. 98-36.000.

PPG Industries, Inc.: *See—*
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Dehn, Frederick C., 3,768,865.
Hess, Roland H.; Hoekje, Howard H.; Creasey, Jack R.; and Strain, Franklin, 3,768,537.
Wiley, Daniel E.; McDougal, Harmon A.; and Turner, Allan L., 3,768,551.

Precision Metalsmiths, Inc.: *See—*
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Preher, John L.; and McClure, John L., to General Electric Company. Waste food disposer mounting assembly. 3,768,742, Cl. 241-100.500.

Preis, Lothar: *See—*
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Prelog, Vladimir; Zaehner, Hans; and Bickel, Hans, to Ciba-Geigy Corporation. Antibiotic A 28829. 3,769,418, Cl. 424-121.000.

Prochnow, Jurgen; and Simon, Walter, to Rheinmetall G.m.b.H. Carrier projectiles. 3,768,755, Cl. 244-3.240.

Procter & Gamble Company, The: *See—*
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Producers Service Corporation: *See—*
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Proietti, Albert C. Fish lure. 3,768,195, Cl. 43-42.330.

Proni, Oscar, to Coulter Electronics, Inc. Centrifuge with sample holding means for sedimentation study. 3,768,727, Cl. 233-26.000.

Prophet, Thomas I.: *See—*
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Propst, Robert L.; and Kelly, James O., to Miller, Herman, Inc. Shock mount for caster sockets. 3,768,116, Cl. 16-43.000.

Pullinger, Hans; and Balut, Ernst, to Knorr-Bremse GmbH. Signal indicator for railway vehicles having disc brakes. 3,768,598, Cl. 188-1.00a.

Pullman Incorporated: *See—*
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Raab, Andrew F., to Indak Manufacturing Corporation. Combined electrical control and safety switch for vehicles. 3,769,481, Cl. 200-161.000.

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Raczek, Thaddeus Anthony, to International Business Machines Corporation. Forming a metal and foam plastic composite. 3,768,142, Cl. 29-421.000.

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Rodek, Victor, to Xerox Corporation. Printing apparatus including registration control. 3,768,904, Cl. 355-40.000.
Rogers, Bryant C., to Diacon, Inc. Method for sealing an enclosure for an electronic component. 3,768,991, Cl. 65-36.000.
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Roth, Shirley H., to Cities Service Company. Intumescent composition coated article. 3,769,074, Cl. 117-136.000.
Roth, Shirley H., to Cities Service Company. Process for protecting a substrate with an N'-aryl substituted arylsulfonamide intumescent agent. 3,769,075, Cl. 117-136.000.
Roth, Shirley H., to Cities Service Company. Arylsulonamidopyrazole and imidazole intumescent coated articles. 3,769,076, Cl. 117-136.000.
Roth, Shirley H., to Cities Service Company. Process for protecting a substrate with an aryl-sulfonamidopyrimidine intumescent agent. 3,769,077, Cl. 117-136.000.
Roth, Shirley H.; and Green, Joseph, to Cities Service Company. Article coated with aromatic sulfonamide intumescent agent. 3,769,078, Cl. 117-136.000.
Roth, Shirley H., to Cities Service Company. Process for protecting a substrate from heat and fire. 3,769,079, Cl. 117-136.000.
Roth, Shirley H., to Cities Service Company. Process for coating a substrate with a nitroaryl-sulfonamide-substituted triazine intumescent agent. 3,769,080, Cl. 117-136.000.
Roth, Shirley H., to Cities Service Company. Process for coating a substrate with an amino-arylsulfonamide-substituted triazine intumescent agent. 3,769,081, Cl. 117-136.000.
Roth, Shirley H., to Cities Service Company. Process for coating a substrate with a sulfonamide-substituted triazine intumescent agent. 3,769,082, Cl. 117-136.000.
Roth, Shirley H., to Cities Service Company. Process for protecting a substrate with an arylsulfonamidopyridazine intumescent agent. 3,769,083, Cl. 117-136.000.
Roth, Shirley H., to Cities Service Company. p,p'-Oxybis (benzenesulfonamide) monohydrate. 3,769,343, Cl. 260-556.0ar.
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Ruesch, Alan D. Apparatus for conditioning the edges of metal strip material. 3,768,293, Cl. 72-203.000.
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Ruger, William B.; and Larson, Lawrence L., to Sturm, Ruger & Co., Inc. Loading gate arrangement for single action revolver. 3,768,190, Cl. 42-66.000.
Rundell, Clark A.; and McDaniel, Carl V., to Grace, W. R., & Co. Process for the preparation of zeolitic alumino-metallo silicates. 3,769,386, Cl. 423-263.000.
Rusch, David T.; and Lynch, Matthew J., to ICI America, Inc. Ready-to-eat cereal and coating composition. 3,769,438, Cl. 426-99.000.
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Russell, Stanley L.; Gueldenpfennig, Klaus; and Pommerening, Uwe A., to Stromberg-Carlson Corporation. Private automatic branch exchange service circuit complex. 3,769,462, Cl. 179-18.0ad.
Russell, Wayne B., Jr. Rotary and linear driven double-acting cylinder. 3,768,578, Cl. 173-150.000.
Rys, Tadeusz J., to Square D Company. Raintight enclosure having particular cover mounting means. 3,768,690, Cl. 220-38.000.
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Saito, Tadashi; and Sakai, Kiyoshi, to Kabushiki Kaisha Ricoh. Light-sensitive diazotype copying material. 3,769,021, Cl. 96-91.00r.

Saito, Tadashi; and Gejyo, Tetsuo, to Hitachi, Ltd. Method for forming carbon coating and composite article with a carbonaceous coating thereon. 3,769,084, Cl. 117-216.000.

Sakai, Kazunari: *See—*
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Sakai, Kiyoshi: *See—*
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Sakai, Masatada; Hara, Akira; Nomaguchi, Tamotsu; Ishida, Akio; and Fujiwara, Michio, to Mitsubishi Denki Kabushiki Kaisha. Combustion apparatus for liquid fuel. 3,768,958, Cl. 431-208.000.

Sakamoto, Eiichi: *See—*
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Sakazume, Kaiichiro; Sakamoto, Eiichi; and Saito, Shizuo, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic material with sensitizing dye combination. 3,769,024, Cl. 96-124.000.

Sakurada, Teruji, to Toyo Kohan Co., Ltd. and Toa Seiki Co., Ltd. Steel strap welding apparatus for use in an automatic strapping machine. 3,769,485, Cl. 219-56.000.

Salaun, Harold L., Jr.: *See—*
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Salcedo, Guido, to Echo Science Corporation. Spring biased tape guide with means for distributing tape edge forces along the tape length. 3,768,717, Cl. 226-198.000.

Saltman, William M.; and Throckmorton, Morford C., to Goodyear Tire & Rubber Company, The. Method of polymerizing butadiene with the aid of a three component catalyst comprising a mixture of (1) a group II or III metal hydride or derivatives thereof, (2) a organonickel or cobalt compound and (3) a fluorine containing material. 3,769,270, Cl. 260-94.300.

Saluti, Gerald M.; and Petropoulos, John Christos, to American Cyanamid Company. Preparation of dianhydrides from maletic anhydride and a vinyl benzene. 3,769,304, Cl. 260-346.600.

Sambucetti, Carlos J., to International Business Machines Corporation. Multicolor permanent and erasable printing. 3,769,629, Cl. 346-74.0ch.

Sams, Powell F.: *See—*
Katz, Morris H.; Sams, Powell F.; and Riley, Duane M., 3,769,028.

Samsing, Rolf A., to Gillette Company, The. Carton. 3,768,723, Cl. 229-51.0ts.

Samtleben, Hans-Wolfgang: *See—*
Stahle, Helmut; Kuppe, Herbert; Kummer, Werner; and Samtleben, Hans-Wolfgang, 3,769,288.

Samuelson, Hans Olof; and Noreus, Goteborg Sture Erik Olof, to Mo och Domsjo Aktiebolag. Digestion of wood with oxygen in the presence of alkali. 3,769,152, Cl. 162-65.000.

San-Abbott Limited: *See—*
Hashimoto, Sei; Nakatani, Keizo; Suzuki, Shoji; Daigo, Hiroshi; and Fujino, Ichizo, 3,769,244.

Sanderson, Dewy S. C. Disinfectant deodorizer and colorizer device for toilet flush tanks. 3,768,104, Cl. 4-228.000.

Sando Iron Works Company Limited: *See—*
Sando, Yoshikazu; and Takasu, Masao, 3,768,281.

Sando, Yoshikazu; and Takasu, Masao, to Sando Iron Works Company Limited. Pressure sealing apparatus. 3,768,281, Cl. 68-5.00e.

Sannes, Laurence A.: *See—*
Johnson, Clifford; Duncan, Martin D.; and Sannes, Laurence A., 3,768,210.

Santoni, Cesar, to Greif Bros. Corporation. Container assembly and improved clamping ring therefor. 3,768,848, Cl. 292-256.690.

Sanz, Manuel C.; Sturgis, Byron E.; Lawson, Charles V.; and Bain, Joe K. Automatic test tube transporter and sample dispenser. 3,768,526, Cl. 141-130.000.

Sarnes, Myron C.: *See—*
Dunn, William M.; and Sarnes, Myron C., 3,768,327.

Sato, Akira: *See—*
Ohkubo, Kinji; Hinata, Masanao; Noguchi, Junpei; Ohmura, Kunioki; Sato, Akira; and Ogawa, Akira, 3,769,016.
Ohkubo, Kinji; Shiba, Keisuke; Noguchi, Junpei; Ohmura, Kunioki; Sato, Akira; and Ogawa, Akira, 3,769,025.
Shiba, Keisuke; Takei, Haruo; and Sato, Akira, 3,769,026.

Sato, Masaaki, to Olympus Optical Co., Ltd. Cassette tape recorder. 3,768,814, Cl. 274-4.00e.

Satoh, Kimio: *See—*
Hara, Takeshi; Niida, Taro; Satoh, Kimio; Kondo, Shinichi; Akita, Eiichi; Sezaki, Masaji; Shimura, Masaru; Nishio, Takako; Hamamoto, Kazuko; and Koike, Makiko, 3,769,403.

Saunders, William T., to National Steel Corporation. Container easy-open structure. 3,768,692, Cl. 220-54.000.

Saurenman, Donald G.: *See—*
Smith, Harold W.; and Saurenman, Donald G., 3,768,258.

Sauret-Ponsa, Carlos. Water tap. 3,768,513, Cl. 137-606.000.

Savage, Joseph W.: *See—*
Corsmeier, Robert J.; Savage, Joseph W.; and Andersen, Richard H., 3,768,924.

Savarese, Antonio, Jr., to United States of America, Army. Anti-disturbance delay fuze. 3,768,407, Cl. 102-8.000.

Savarin, Alex; and Rader, Guy, to Philco-Ford Corporation. Voltage controlled variable power divider. 3,769,610, Cl. 333-10.000.

Saveliev, Gennady Vasilievich. Wheel rim for pneumatic tyre. 3,768,538, Cl. 152-410.000.

Sawyer, Dwight L.; and Wilson, Martin, to United States Borax & Chemical Corporation. Flotation of arsenic minerals from borate ores. 3,768,738, Cl. 241-24.000.

Sawyer, John M., to Goodyear Tire & Rubber Company, The. Polyesterurethane coated metal. 3,769,069, Cl. 117-75.000.

Sayer, Robert K., to Eastman Kodak Company. Adjustable web splicing device. 3,769,140, Cl. 156-502.000.

Scaggs, Lee Edward, to CMX Systems, Inc. Noise reduction system. 3,769,611, Cl. 333-14.000.

Scantlin, John R., to Transaction Technology Inc. Series regulator having regulation for variations in line voltage and load demand. 3,769,573, Cl. 323-9.000.

Scappator, Vincent S.; and Yetter, Allan S., to Eastman Kodak Company. Method and apparatus for stripping film from a film cartridge. 3,768,133, Cl. 29-200.00d.

Schaefer, Helmut: *See—*
Bayer, Bernd; Hubert, Alexander; Riess, Werner; Schaefer, Helmut; and Wetteroth, Hans, 3,769,058.

Schaefer, Louis F., to Stanford Research Institute. Cross talk reducing circuitry for encoded color television cameras. 3,769,450, Cl. 178-5.40r.

Schafer, Arthur W., Sr. Apparatus for measuring piston position. 3,768,170, Cl. 33-181.0at.

Schafer, Fritz: *See—*
Wagner, Hans; and Schafer, Fritz, 3,769,339.

Schafer, Kugelfischer Georg, & Co.: *See—*
Gassner, Hans, 3,768,129.

Schauffele, Carl N.; and Valenta, Harry L., to Eastman Kodak Company. Gain control circuit. 3,769,598, Cl. 323-185.000.

Scheinpflug, Hans: *See—*
Timmler, Helmut; Draber, Wilfried; Buchel, Karl Heinz; Grewe, Ferdinand; Kaspers, Helmut; and Scheinpflug, Hans, 3,769,422.

Schenek, Carl Maschinenfabrik GmbH: *See—*
Wawre, Carl-Martin; and Chudey, Ivan, 3,769,594.

Scheurer, Paul: *See—*
Angst, Kurt; and Scheurer, Paul, 3,768,242.

Schiel, Christain, to Voith, J. M., GmbH. Stock inlet system for a paper making machine including converging settling ducts. 3,769,155, Cl. 162-343.000.

Schilt, Stephen J. Method of glazing greenware with an ambient epoxy resin during composition. 3,769,070, Cl. 117-94.000.

Schindler, Hans: *See—*
Ross, Norman C.; Schindler, Hans; and Waples, Joseph H., 3,769,213.

Schirtzinger, Joseph F., to Air Logistics Corporation. Sweep ice cutter. 3,768,428, Cl. 114-42.000.

Schladitz, Herman J., to Schladitz Whiskers A.G. Porous, electrically conductive member. 3,769,086, Cl. 117-228.000.

Schladitz Whiskers A.G.: *See—*
Schladitz, Herman J., 3,769,086.

Schlatter, Gerald Lance, to International Telephone and Telegraph Corporation. Function generator and components thereof. 3,769,500, Cl. 235-197.000.

Schlesinger, Eugene R.: *See—*
Markle, David A.; and Schlesinger, Eugene R., 3,769,516.

Schlienger, Max P. Arc electrode with deformable diffuser. 3,769,441, Cl. 13-18.000.

Schlumberger Technology Corporation: *See—*
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Schmatz, Duane John; and Yen, Chia-Ming, to Ford Motor Company. Method of soldering. 3,768,141, Cl. 29-495.000.

Schmidkonz, Christian: *See—*
Wiest, Hubert; Bergmeister, Eduard; Kirst, Paul Gerhard; and Schmidkonz, Christian, 3,769,251.

Schmidt, Eckart W., to Rocket Research Corporation. Crash restraining activating system. 3,768,832, Cl. 280-150.0ab.

Schmidt, Jacob E., to McGraw-Edison Company. Battery case construction. 3,769,095, Cl. 136-166.000.

Schmieley, Donald A.: *See—*
LeVesque, Charles R.; Schmieley, Donald A.; Hunstiger, Francis G.; and Brown, Arlie L., 3,768,402.

Schmitt, John A.: *See—*
Beck, Henry N.; Ledbetter, Harvey D.; and Schmitt, John A., 3,769,269.

Schneider, Donald Louis: *See—*
Hagerman, Larry Melvin; and Schneider, Donald Louis, 3,769,399.

Schneider, Erich. Conveyor system. 3,768,625, Cl. 198-20.000.

Schneider, Klaus: *See—*
Flaschar, Heinz; and Schneider, Klaus, 3,768,375.

Schnur, Earl J.; and Kamulski, David A., to Westinghouse Electric Corporation, mesne. Electronic leakage resistance detector for an AC control circuit. 3,769,577, Cl. 324-51.000.

Schoen, Kurt, to Contraves AG. Particle counting apparatus. 3,769,582, Cl. 324-71.0cp.

Schollenberger, Charles S.: *See—*
Stewart, Floyd D.; and Schollenberger, Charles S., 3,769,245.

Schon, Franz: *See—*
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Schreiber, Friedrich: *See—*
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Schroeder, Clifford A. Ducting. 3,768,523, Cl. 138-141.000.

Schroeder, Robert Edward: *See—*
Hamilton, Billy Harold; Kunzinger, Frederick Francis; and Schroeder, Robert Edward, 3,769,568.

Schromm, Kurt; Mentrup, Anton; Zeile, Karl; Renth, Ernst-Otto; Engelhardt, Albrecht; and Traunecker, Werner, to Boehringer Ingelheim G.m.b.H. Pharmaceutical compositions containing a bis-(dihydroxy-phenyl-ethylol)-substituted alkylenediamine and methods ofusing same. 3,769,430, Cl. 424-330.000.

Schudel, Peter: *See—*
Lamparsky, Dietmar; and Schudel, Peter, 3,769,328.

Schuftan, Paul Maurice, to British Oxygen Company Limited, The. Air separation. 3,768,270, Cl. 62-31.000.

Schukei, Glen Elwin, to Combustion Engineering, Inc. Fuel bundle and control element assembly handling mechanism. 3,768,668, Cl. 214-27.000.

Schulte, Rudolf R. Valve for controllable release of entrapped body fluids. 3,768,508, Cl. 137-522.000.

Schultz, John R.; Heidacher, John W.; Sharer, John M.; Adams, James S.; and Damico, Frank M., to Hill-Rom Company, Inc. Hospital service unit. 3,769,502, Cl. 240-4.000.

Schulz, Lothar: *See—*
Kuckertz, Herbert; Arpe, Hans-Jurgen; and Schulz, Lothar, 3,769,331.

Schumacher, Harold F.; executor of the estate of said Meyers, Cornelius B.: *See—*
Meyers, Cornelius B.; and Miolla, Ralph J., Jr., 3,768,682.

Schumacher, William Ludlow, to AMP Incorporated. Method of making a unitary connector structure. 3,769,395, Cl. 264-102.000.

Schummer, Nils: *See—*
Bauer, Ralf; and Schummer, Nils, 3,768,664.

Schunck, Horst: *See—*
Hesse, Kurt; Wagner, Hans; and Schunck, Horst, 3,769,504.

Schur, Mary S.: *See—*
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Schuyler Development Corporation: *See—*
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Schwandt, Gunther: *See—*
Oomen, Joris Jan Cornelis; Romeijn, Frans Cornelis; and Schwandt, Gunther, 3,769,089.

Schwartz, Jerome, to Taylor Lock Company. Double door lock. 3,768,285, Cl. 70-134.000.

Schwartz, Osten, to Aktiebolaget Electrolux. Combination rug and floor vacuum cleaner nozzle. 3,768,114, Cl. 15-319.000.

Schwarzmann, Matthias: *See—*
Leutner, Bernd; Schwarzmann, Matthias; and Ohlinger, Manfred, 3,769,087.

Schweitzer, Roy C., to Addressograph-Multigraph Corporation. Adhesive applicator. 3,768,439, Cl. 118-315.000.

Schweizerische Industrie-Gesellschaft: *See—*
Kopp, Georg, 3,768,381.

Schwerdtfeger, Gunter; and Kammerling, Bruno, to Gutehoffnungshuette Sterkrade A.G. Adjustable impact casing for a shaft furnace. 3,768,791, Cl. 266-31.000.

Schwieter, Ulrich: *See—*
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,769,320.

SCM Corporation: *See—*
Kuksa, Henry R., 3,768,805.

Scott, Mamie V. Multiple slotted hair styling and permanent wave rollers. 3,768,492, Cl. 132-39.000.

Scragg, Ernest, & Sons Limited: *See—*
Waterhouse, George, 3,768,938.

Scribens, John: *See—*
Bold, John; and Scribens, John, 3,768,283.

Seeger, Ernst: *See—*
Landgraf, Claus-Adolf; Seeger, Ernst; Engel, Wolfhard; Teufel, Helmut; and Machleidt, Hans, 3,769,299.

Seeley, Robert D.: *See—*
Latham, S. Duane; and Seeley, Robert D., 3,769,404.

Seely, Neil G.: *See—*
Jenkins, Gerald L.; Jungjohann, Vernon H.; Marvin, Edgar S.; and Seely, Neil G., 3,768,896.

Segal, Leon, to Allied Chemical Corporation. Impact-resistant polyethylene terephthalate compositions. 3,769,260, Cl. 260-40.00r.

Seidel, Michael C.; Von Meyer, William C.; and Greenfield, Stanley A., to Rohm & Haas Company. Fungicidal 1,2,4-4H-triazole derivatives. 3,769,411, Cl. 424-269.000.

Seidel, William C.: *See—*
Mitchell, William A.; and Seidel, William C., 3,769,038.

Seifert, Edwin A., Jr. Press weeder. 3,768,425, Cl. 111-85.000.

Seifert, Richard: *See—*
Kubisch, Hans-Joachim; Seifert, Richard; and Thorn, Walter, 3,768,252.

Seiger, Harvey N.; and Ritterman, Paul F., to Gulton Industries, Inc. Rechargeable batteries and charge control circuit therefore. 3,769,088, Cl. 136-3.000.

Sellers, David J.; and Roy, Donald W., to Coors Porcelain Company. Method for making heat resistant transparent optical elements. 3,768,990, Cl. 65-18.000.

Selwitz, Charles M.: *See—*
Bacha, John D.; and Selwitz, Charles M., 3,769,355.
Bacha, John D.; and Selwitz, Charles M., 3,769,356.
Bacha, John D.; and Selwitz, Charles M., 3,769,357.

Senkewich, Alexander M. Automobile cigarette case with an automatic electrical lighter. 3,769,492, Cl. 219-262.000.

Service d'Exploitation Industrielle des Tabacs et des Allumettes: *See—*
Imbert, Pierre, 3,768,712.

Sesta, Gerald J.: *See—*
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Sezaki, Masaji: *See—*
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Shachter, Moses: *See—*
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Shafer, Jack: *See—*
Shafer, James A., 3,768,420.

Shafer, James A.; deceased (by Peckinpaugh, Ralph L.; executor), 1/3% to Shafer, Jack, 1/3% to Shafer, James K., 1/6% to Shafer, James R. and 1/6% to Thatcher, Marilyn S. Dampened railway car truck. 3,768,420, Cl. 105-197.00d.

Shafer, James K.: *See—*
Shafer, James A., 3,768,420.

Shafer, James R.: *See—*
Shafer, James A., 3,768,420.

Shaheen, Joseph M.; Quintana, Leo J.; and Bennett, William R., to North American Rockwell Corporation. Method for making a mold for casting open tunnels in plated wire mats. 3,769,112, Cl. 156-11.000.

Shapiro, Jonas M.; and Julie, Joel, to Litton Systems, Inc. Hybrid coupler for radio transmitter having parallel output amplifier stages. 3,769,586, Cl. 325-157.000.

Sharer, John M.: *See—*
Schultz, John R.; Heidacher, John W.; Sharer, John M.; Adams, James S.; and Damico, Frank M., 3,769,502.

Sharpless, Edward N., to Liquid Crystal Industries, Inc. Variable color display device and projection means therefor. 3,768,886, Cl. 350-160.01c.

Shatzkes, Morris: *See—*
Freedman, James F.; Henry, George R.; Mayadas, Ashok F.; and Shatzkes, Morris, 3,769,618.

Shaver, William R.; and Nagy, Ernest J., to Pullman Incorporated. Water drain structure for railway car door arrangement. 3,768,422, Cl. 105-409.000.

Shaw, Robert F. Surgical cutting instrument having electrically heated cutting edge. 3,768,482, Cl. 128-303.001.

Sheehan, Gerard Martin; Roberts, George Leathwhite, Jr.; and Dupree, Paul Montgomery, to American Cyanamid Company. TiO_2 pigments. 3,769,255, Cl. 260-41.00a.

Shelby, Richard K.: *See—*
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Shell Oil Company: *See—*
Broussard, Douglas E.; Ayers, Ray R.; and Walker, George E., Jr., 3,768,269.
Hill, Harold J.; and Thigpen, David Ross, 3,768,560.
Smith, Ronald S.; Kuderna, Jerome C., Jr.; and Potter, Richard C., 3,769,416.
Van Breen, Adriaan W., 3,769,417.

Shepherd, Leslie Robert; and Hosegood, Samuel Brittan, to United Kingdom Atomic Energy Authority. Neutron absorbers. 3,769,160, Cl. 176-86.00r.

Sherritt Gordon Mines Limited: *See—*
Weir, Donald Robert; Maschmeyer, Dennis G.; and Lavender, William J., 3,768,993.

Sherrod Drywall, Inc.: *See—*
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Shiba, Keisuke: *See—*
Ohkubo, Kinji; Shiba, Keisuke; Noguchi, Junpei; Ohmura, Kunioki; Sato, Akira; and Ogawa, Akira, 3,769,025.

Shiba, Keisuke; Takei, Haruo; and Sato, Akira, to Fuji Photo Film Co., Ltd. Spectrally sensitized silver halide photographic emulsion. 3,769,026, Cl. 96-126.000.

Shibata, Masaji. Sanitary panty or the like. 3,768,481, Cl. 128-288.000.

Shibata, Ryoji. Binder. 3,768,838, Cl. 281-17.000.

Shibatsuji, Naoya: *See—*
Shirota, Goroo; Imanishi, Hiroshi; Shibatsuji, Naoya; Nakayama, Isamu; and Ueda, Masatoshi, 3,768,216.

Shields, Walter A. Dome syringes diaphragm with ballooning. 3,768,473, Cl. 128-218.0nv.

Shimada, Takeo: *See—*
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Shimamura, Juky, to Asahi Corporation. Take-apart doll. 3,768,197, Cl. 46-22.000.

Shimizu, Fumio: *See—*
Sakamoto, Kenro; Fushiki, Isamu; Arai, Shinji; Shimizu, Fumio; Kuwabara, Yoshimi; Nakajima, Tomio; Sugita, Sadao; Inokuma, Hiroyuki; and Tejima, Setsuzo, 3,769,017.
Shimizu, Rentaro: *See—*
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Shipes, Kelly V., to Hudson Products Corporation. Axial flow fan assembly. 3,768,546, Cl. 165-39.000.
Shipley Company, Inc.: *See—*
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Shirota, Goroo; Imanishi, Hiroshi; Shibatsuji, Naoya; Nakayama, Isamu; and Ueda, Masatoshi, to Kabushiki Kaisha Takenaka Komuten. Roof supporting construction. 3,768,216, Cl. 52-73.000.
Shoikhet, Anna Berkovna: *See—*
Nametkin, Nikolai Sergeevich; Durgarian, Sergei Garievich; Kopkov, Vadim Ivanovich; Khotimsky, Valery Samuilovich; Bryantseva, Irina Sergeevna; Petrov, Gennady Nikolaevich; Tolstopyatov, Gennady Mikhailovich; Stadnichuk, Tatyana Validimirovna; Kornilova, Ttyana Alexeevna; and Shoikhet, Anna Berkovna, 3,769,266.
Sholl, Jeffrey J., to Pillsbury Company, The. Method of foam injecting flavor or texture improving substances into meat. 3,769,037, Cl. 426-281.000.
Shtanko, Jury Pavlovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Baglai, Vitaly Mikhailovich; Tsukanov, Georgy Emmanuilovich; Bondarenko, Oleg Petrovich; Bogachenko, Alexei Georgievich; Stupak, Leonid Mikhailovich; Martyn, Viktor Mikhailovich; Shtanko, Jury Pavlovich and Pavliichuk, Georgy Anatolievich, 3,768,541.
Shuffler, Eustace Cosmo: *See—*
Bruinsma, Bote Gosse; and Shuffler, Eustace Cosmo, 3,768,437.
Shutterly, Harold B., to Westinghouse Electric Corporation. Audio reproduction methods and apparatus. 3,769,468, Cl. 179-100.30b.
Siciliano, Anthony J.: *See—*
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Siemens Aktiengesellschaft: *See—*
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Klein, Heinrich; and Pieper, Rudolf, 3,768,172.
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Silver Seiko Co., Ltd.: *See—*
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Silverberg, Morton, to Xerox Corporation. Corona generating methods and apparatus therefor. 3,769,506, Cl. 250-326.000.
Silvernail, Walter: *See—*
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Sincock, Thomas F., to Ilikon Corporation, mesne. Container surface and method of obtaining same. 3,769,056, Cl. 117-5.500.
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Sinfelt, John H.; Barnett, Allan E.; and Carter, James L., to Esso Research and Engineering Company. Plural stage reforming with a palladium catalyst in the initial stage. 3,769,201, Cl. 208-65.000.
Singer Company, The, mesne: *See—*
Henegar, Harold H., 3,769,606.
Singh, Digjit, to Bell & Howell Company. Solid state radiofrequency circuits. 3,769,616, Cl. 333-73.00s.
Singleton, James. Coupler for interconnecting two bicycles. 3,768,834, Cl. 280-209.000.
Sinko, Verl: *See—*
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Sjoman, Carl F., to Team Industries. Card feeder for folding machine. 3,768,802, Cl. 271-12.000.
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Skau, Evald L.: *See—*
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Landt, Uwe; Slifert, Helmut; and Bretschneider, Otto, 3,768,790.
Sloan, Benjamin Johnston; Martin, Billy M.; Clevenger, Loyd H.; and Dunn, Roger S. Integrated circuit process utilizing orientation dependent silicon etch. 3,768,150, Cl. 29-578.000.
Sloan, Mangum W. Method of precasting a masonry wall panel. 3,768,225, Cl. 52-743.000.
Smierciak, Walter: *See—*
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Smith, Alfred A. Crutch with adjustable handgrip. 3,768,495, Cl. 135-51.000.
Smith, Harold W.; and Saurenman, Donald G., to Consan Packfic Incorporated. Polluting fume abatement apparatus. 3,768,258, Cl. 60-275.000.
Smith, Ivan L., to Texaco Inc. Air heater. 3,768,964, Cl. 432-222.000.
Smith, John Roberton: *See—*
Caird, Robin Dempsey; and Smith, John Roberton, 3,768,156.
Smith Kline & French Laboratories: *See—*
Caldwell, Henry Cecil, 3,769,317.
Loev, Bernard; and Zirkle, Charles L., 3,769,275.
Smith, Ronald S.; Kuderna, Jerome C., Jr.; and Potter, Richard C., to Shell Oil Company. Hydrocylated polymer-thermoplastic resin-organo phosphate compositions. 3,769,416, Cl. 424-78.000.
Smits, Bernhard Johannes, to Hazemag Hartzerkleinerungs- und Vement-Maschinenbau Gesellschaft m.b.H. Impact comminutor. 3,768,743, Cl. 241-101.200.
Snitzer, Morton: *See—*
Rogers, Walter Clark, Jr.; and Snitzer, Morton, 3,768,859.
Snow, John Douglas, to MacLaren Snow Limited. Equipment for collecting grass-cutting from a grass-mower. 3,768,238, Cl. 56-199.000.
Societe Anonyme D.B.A.: *See—*
Bejot, Philippe, 3,768,601.
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Societe Anonyme dite: L'Oreal: *See—*
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Societe Anonyme dite: Roussel-UCLAF: *See—*
Boissier, Jacques Robert; and Ratouis, Roger Robert Etienne Eugene, 3,769,346.
Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
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Societe des Accumulateurs Fixes et de Traction (Societe Anonyme): *See—*
Dechenaux, Victor Louis, 3,769,092.
Societe d'Etudes et de Realisations Electroniques: *See—*
Ferrier, Noel Henri, 3,768,909.
Societe d'Etudes Scientifiques et Industrielles de l'Ile-de-France: *See—*
Pitel, Guy Bernard, 3,769,421.
Societe Generale d'Entreprises: *See—*
Gerard, Paul, 3,768,446.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Bouiller, Jean Georges; Bauger, Louis Jules; and Lacroix, Jean-Baptiste, 3,768,933.
Camboulives, Andre Alphonse Mederic Leon; and Vandenbroucke, Roger Alfred Jules, 3,768,251.
SOCIMI-Societa Construzioni Industriali Milano S.p.A.: *See—*
Marzocco, Alessandro, 3,768,607.
Sohr, Hans-Ulrich: *See—*
Sohr, Hans-Ulrich; Leo, Reinhard; Bachmann, Wolfgang; and Herrmann, Siegfried, 3,768,967.
Sohr, Hans-Ulrich; Leo, Reinhard; Bachmann, Wolfgang; and Herrmann, Siegfried, to Sohr, Hans-Ulrich. Device for heat treatment of strips and the like. 3,768,967, Cl. 8-149.100.
Sollich, Helmut, to Sollich OHG. Cooling tunnel. 3,768,553, Cl. 165-120.000.
Sollich OHG: *See—*
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Soltysiak, Edwin J.: *See—*
Liberman, Richard A.; Bond, William C.; and Soltysiak, Edwin J., 3,769,454.
Solvay & Cie: *See—*
Hermans, Jean Pierre; and Henrioulle, Paul, 3,769,233.
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Solymos, Frederic, to Westinghouse Electric Corporation. Elevator compensation chains. 3,768,596, Cl. 187-21.000.
Sonoda, George: *See—*
Chu, William M.; Lee, James M.; and Sonoda, George, 3,769,528.
Sontheim, Johann: *See—*
Von Pfeil, Dirsko; and Sontheim, Johann, 3,769,466.
Soriano, Rene: *See—*
Goldfarb, Adolph E.; and Soriano, Rene, 3,768,810.
Sorrels, Delmar Lynn. Adjustable animal harness. 3,768,445, Cl. 119-109.000.
Southard, George Lee, to Lilly, Eli, and Company. N-Protected amino acids and peptides. 3,769,271, Cl. 260-112.500.
Spani, Wayne, to Eastman Kodak Company. Positive-negative microfilm film reader. 3,768,897, Cl. 353-26.000.
Spatz Corporation: *See—*
Spatz, Walter B., 3,768,705.
Spatz, Walter B., 3,768,915.

Spatz, Walter B., to Spatz Corporation. Dispensers for fluent masses. 3,768,705, Cl. 222-213.000.
Spatz, Walter B., to Spatz Corporation. Axial force limiting cosmetic marking devices. 3,768,915, Cl. 401-50.000.
Spaulding, Edward H. Shallow water adaptor for outboard motors. 3,768,432, Cl. 115-42.000.
Special Machinery, Inc.: *See—*
Cloud, James E., 3,768,670.
Spectral Data Corporation: *See—*
Yost, Edward F., Jr., 3,768,898.
Spectrospin AG: *See—*
Keller, Toni W.; and Tschopp, Werner H., 3,769,554.
Spellman, Francis T., Jr., to Symons Corporation. Distributing conveyor system for a rotary concrete mixing or other truck. 3,768,784, Cl. 259-169.000.
Spencer, Donald J. Plastic breaker strip. 3,768,687, Cl. 220-9.00r.
Spencer, Richard B.; and Winter, Arthur R., to Sperry Rand Corporation. Digital indicator with means for suppressing least significant digit dither. 3,769,583, Cl. 324-78.00d.
Spengler, Ernst M., to Stanztechnik GmbH. Method and apparatus for handling flat, flexible workpieces. 3,768,807, Cl. 271-190.000.
Sperry Rand Corporation: *See—*
Spencer, Richard B.; and Winter, Arthur R., 3,769,583.
Spielberg, David H.: *See—*
Carnahan, Robert D.; Youtsey, Karl J.; and Spielberg, David H., 3,768,259.
Spinnler, Rainer: *See—*
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Spittle, Walter: *See—*
Foss, Richard C.; and Spittle, Walter, 3,769,525.
Spitzer, Henry W. Desk moving device. 3,768,676, Cl. 214-392.000.
Spivack, John D., to Ciba-Geigy Corporation. Polyol esters of alkylated-4-hydroxybenzyl phosphinic acids. 3,769,372, Cl. 260-928.000.
Spraker, Dick; and Baker, Paul E., to Envir-O-Tab, Inc. Retainable tear-away tab for container. 3,768,693, Cl. 220-54.000.
Sprinkle, James K.; and Misitano, Santi F. Hot topping. 3,769,046, Cl. 106-38.220.
Spry, Douglas O.: *See—*
Morin, Robert B.; Spry, Douglas O.; Hauser, Kenneth L.; and Mueller, Richard A., 3,769,316.
Spurlock, James W.; Howard, George C.; and Bearden, William G.; deceased (by Braden, Edith Mae; administratrix), to Amoco Production Company. Prepacked multi-graded sand screen. 3,768,557, Cl. 166-228.000.
Square D Company: *See—*
Cox, Russell, 3,768,321.
Rys, Tadeusz J., 3,768,690.
Squibb, E. R., & Sons, Inc.: *See—*
Czaplinski, Thomas V., 3,769,490.
Parker, William Lawrence; and Neidleman, Saul Lewis, 3,769,291.
St. Germain, James L.: *See—*
Engel, William K.; Van Gaasbeek, Peter H.; Norick, William B.; and St. Germain, James L., 3,768,377.
Staats, Louis T., Sr.; and Adkinson, Fred H. Fruit picker. 3,768,239, Cl. 56-328.00r.
Stabilization Chemicals, mesne: *See—*
Glenn, J. Harlan, 3,768,266.
Stadnichuk, Tatyana Validimirovna: *See—*
Nametkin, Nikolai Sergeevich; Durgarian, Sergei Garievich; Kopkov, Vadim Ivanovich; Khotimsky, Valery Samuilovich; Bryantseva, Irina Sergeevna; Petrov, Gennady Nikolaevich; Tolstopyatov, Gennady Mikhailovich; Stadnichuk, Tatyana Validimirovna; Kornilova, Ttyana Alexeevna; and Shoikhet, Anna Berkovna, 3,769,266.
Staff & Schwarz GmbH: *See—*
Hesse, Kurt; Wagner, Hans; and Schunck, Horst, 3,769,504.
Stahl, William F., to Westinghouse Electric Corporation. Steam generator heated with liquid metal. 3,768,554, Cl. 165-134.000.
Stahle, Helmut; Kuppe, Herbert; Kummer, Werner; and Samtleben, Hans-Wolfgang, to Boehringer Ingelheim G.m.b.H. Bicyclic nitrogenous compounds and salts. 3,769,288, Cl. 260-256.40f.
Stairs, Colin Mac Kenzie, to Canadian General Electric Company Limited. AC-DC converter circuit for minimizing harmonics. 3,769,570, Cl. 321-9.00r.
Staley, Jerry A., to Chance, A. B., Company. Guard electrode apparatus for boom of insulated aerial device. 3,769,578, Cl. 324-54.000.
Standard-Triumph Motor Company Limited, The: *See—*
King, Charles Spencer, 3,768,584.
Stanford Research Institute: *See—*
Fremouw, Edward Joseph; and Burns, Alan Alexander, Jr., 3,769,585.
Schaefer, Louis F., 3,769,450.
Stange, Klaus K., to Xerox Corporation. Sheet feeder. 3,768,803, Cl. 271-34.000.
Stanley Home Products, Inc.: *See—*
Johnson, Alvin O.; and Rice, Herbert D., 3,768,110.
Stansted Engineering Limited: *See—*
Freeman, Alan John Morris, 3,768,927.
Stanton, Garth M.; and Dreher, John L., to Chevron Research Company. Grease thickened with polyurea metal salts. 3,769,212, Cl. 252-33.000.
Stanztechnik GmbH: *See—*
Spengler, Ernst M., 3,768,807.
Stark, Sven Olof Soren, to Tetra Pak Developpement SA. Production of containers. 3,768,380, Cl. 93-36.00r.
Static-S.p.A.: *See—*
Greissing, Hans, 3,768,464.
Staub, Alfred: *See—*
Kollik.er, Hans-Peter; Staub, Alfred; and Hindermann, Peter, 3,769,305.
Stauffer Chemical Company: *See—*
Gutman, Arnold, 3,769,419.
Gutman, Arnold D., 3,769,375.
Stauffer Chemical Company, mesne: *See—*
Stevenson, Joseph Eugene, 3,769,253.
Stearns, Charles A. Ultrasonic apparatus and method for analyzing defects in material. 3,768,306, Cl. 73-67.80r.
Stedman, James K.: *See—*
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Steffens, Hans: *See—*
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Steffey, James R.: *See—*
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Steiger, Edward L.: *See—*
Dietrich, Heinz J.; and Steiger, Edward L., 3,769,313.
Dietrich, Heinz J.; and Steiger, Edward L., 3,769,327.
Steiger, Edward L.; and Dietrich, Heinz J., to Owens-Illinois, Inc. N(p-n-alkoxycarbonyloxybenzylidene)-p'-n-butoxyaniline liquid-crystal compounds. 3,769,314, Cl. 260-463.000.
Steinberger, Siegfried; Nagel, Erich; and Von Stein, Werner, to Agfa-Gevaert AG. Photographic copying apparatus with illumination correction. 3,768,903, Cl. 355-38.000.
Steinbrink, Charles F., Jr.: *See—*
Bressler, Leo F.; and Steinbrink, Charles F., Jr., 3,769,172.
Steinkuhl, Bernd: *See—*
Hauschopp, Alois; Steinkuhl, Bernd; Breuer, Oswald; and Ostrop, Berthold, 3,768,866.
Steisslinger, Kurt: *See—*
Ettischer, Helmut; Ort, Wolfgang; Simon, Horst; and Steisslinger, Kurt, 3,768,389.
Stem Development Corporation, mesne: *See—*
Markowitz, Isral J., 3,768,703.
Stepan, William E., to GTE Automatic Electric Laboratories, Incorporated. Method and apparatus for forming holes in a material. 3,768,351, Cl. 83-55.000.
Stephan, Jacques A.: *See—*
Godin, Jacques J.; and Stephan, Jacques A., 3,769,102.
Stephens, Leonard W., to Palmer Fluid Controls, Inc. Sluice gate. 3,768,773, Cl. 251-147.000.
Stephens, Robert Melling. Icebreaker oil tankers. 3,768,427, Cl. 114-41.000.
Steppi, Hubert, to Agfa-Gevaert Aktiengesellschaft. Cinematographic apparatus. 3,768,895, Cl. 352-166.000.
Sterilizer Control Royalties: *See—*
Storm, Lester F. M., 3,768,974.
Sternberg, Herbert B., to Automated Reference Corporation. Vehicle identification apparatus and identing method and mandrel. 3,768,185, Cl. 40-2.200.
Stevenson, Joseph Eugene, to Stauffer Chemical Company, mesne. Primer composition for heat curable silicone rubbers. 3,769,253, Cl. 260-33.6sb.
Stewart, David Gordon; Ball, William John; and Jenkins, Rowland Harris, to BP Chemicals Limited. Oxidation catalysts. 3,769,241, Cl. 252-469.000.
Stewart, Floyd D.; and [illegible]lenberger, Charles S., to Goodrich, B. F., Company, The. Th[illegible]atic polyurethane foam. 3,769,245, Cl. 260-2.5am.
Stewart, Paul Harold; and Heseltine, Donald Warren, to Eastman Kodak Company. Beta-disulfone silver halide solubilizing agents. 3,769,014, Cl. 96-61.000.
Stewart-Warner Corporation: *See—*
Little, Arthur J.; and Mayer, William R., 3,768,158.
Metzler, Robert H.; and Zurek, Jerome N., 3,768,314.
Powell, Patrick L., 3,768,315.
Williams, Ronald O., 3,769,593.
Stichting Waterbonwkundig Laboratorium: *See—*
Mann, Adriaan Barend; and Christianus, Jacobus Johannes, 3,768,580.
Stockl, Erich, to Poligrat Corporation. Vibratory conveyor for the continuous electrochemical treatment of mass-produced parts. 3,769,191, Cl. 204-201.000.
Stockton, Richard E.: *See—*
Bennett, Harry L.; and Stockton, Richard E., 3,768,629.
Stoffey, Donald G.: *See—*
Lee, Henry L., Jr.; and Stoffey, Donald G., 3,769,336.
Stokes, John J., Jr.; Cargnel, Robert A.; and Geiger, Robert C., to Aluminum Company of America. Lead-bismuth alloy for soldering aluminum. 3,769,007, Cl. 75-166.00b.
Stone, Joseph J., to Dick, A. B., Company. Ink jet printing system using ion charging of droplets. 3,769,627, Cl. 346-75.000.

Stone, Robert F., to General Electric Company. Narrow band television system. 3,769,452, Cl. 178-6.000.

Storm, Lester F. M., to Sterilizer Control Royalties. Disposable colorimetric indicator device for measuring the concentration of chlorine in water. 3,768,974, Cl. 23-253.00r.

Strain, Franklin: *See—*
Hess, Roland H.; Hoekje, Howard H.; Creasey, Jack R.; and Strain, Franklin, 3,768,537.

Stranicky, Fedor, to AB Svenska Industrie Konstruktions-och Berakningskontor Sikob. Closed, preferably spherical container. 3,768,700, Cl. 222-107.000.

Straslicka, William A., to Carrier Corporation. Steam turbine governor valve actuating mechanism. 3,768,776, Cl. 251-231.000.

Straus, Alan E., to Chevron Research Company. Linear alkylbenzene sulfonate detergent compositions. 3,769,243, Cl. 152-558.000.

Streeter, Warren D. Aquarium filter. 3,768,651, Cl. 210-169.000.

Strid, Karl-Gustav A.: *See—*
Johansson, Stig R.; Johnsson, Lars B.; and Strid, Karl-Gustav A., 3,768,313.

Strobel, Albert F.: *See—*
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Strobel, Rudolf G.: *See—*
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Stromberg-Carlson Corporation: *See—*
Russell, Stanley L.; Gueldenpfennig, Klaus; and Pommerening, Uwe A., 3,769,462.

Stuart, David O., to Boeing Company, The. Rocket propulsion method and means. 3,768,254, Cl. 60-204.000.

Stucky, James L.; and Stucky, Ronald K. Double parallelogram linkage lift. 3,768,591, Cl. 182-2.000.

Stucky, Ronald K.: *See—*
Stucky, James L.; and Stucky, Ronald K., 3,768,591.

Stuetz, Dagobert E.: *See—*
Di Pietro, Joseph; and Stuetz, Dagobert E., 3,769,262.

Stuetz, Dagobert E., to Celanese Corporation. Thermal stabilization of addition polymers. 3,769,258, Cl. 260-45.80n.

Stuller, Howard E., to Clark Equipment Company. Roll-over protection cab. 3,768,856, Cl. 296-28.00c.

Stupak, Leonid Mikhailovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Baglai, Vitaly Mikhailovich; Tsukanov, Georgy Emmanuilovich; Bondarenko, Oleg Petrovich; Bogachenko, Alexei Georgievich; Stupak, Leonid Mikhailovich; Martyn, Viktor Mikhailovich; Shtanko, Jury Pavlovich and Pavliichuk, Georgy Anatolievich, 3,768,541.

Sturgis, Byron E.: *See—*
Sanz, Manuel C.; Sturgis, Byron E.; Lawson, Charles V.; and Bain, Joe K., 3,768,526.

Sturm, Ruger & Co., Inc.: *See—*
Ruger, William B.; and Larson, Lawrence L., 3,768,190.

Sturwold, Robert J.; and Barrett, Fred O., to Emery Industries, Inc. Ester lubricant compositions. 3,769,215, Cl. 252-49.500.

Stut, Hans; and Keller, Wolfgang, to Siemens Aktiengesellschaft. Apparatus and method for floating-zone melting of a semiconductor rod. 3,769,484, Cl. 219-10.570.

Suchy, Milos: *See—*
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,769,320.

Sudnick, Dennis J.: *See—*
Davis, Dennis J.; Sudnick, Dennis J.; Juhasz, John E.; and Kurichh, Sham, 3,768,875.

Sugano, Izuru; Kenmoku, Yoshihiro; Akashi, Tsuneo; Matsubara, Tetsujin; and Okuda, Taneaki, to Nippon Electric Company Limited. Manganese-zinc ferrite materials. 3,769,219, Cl. 252-62.590.

Sugimoto, Shigetoki: *See—*
Matsuo, Yoshio; and Sugimoto, Shigetoki, 3,769,587.

Sugita, Sadao: *See—*
Sakamoto, Kenro; Fushiki, Isamu; Arai, Shinji; Shimizu, Fumio; Kuwabara, Yoshimi; Nakajima, Tomio; Sugita, Sadao; Inokuma, Hiroyuki; and Tejima, Setsuzo, 3,769,017.

Sulfaro, Andrew N.: *See—*
Jessup, Richard J.; and Sulfaro, Andrew N., 3,768,173.

Suling, Carlhans: *See—*
Weisbeck, Ronald; Pampus, Gottfried; Suling, Carlhans; and Preis, Lothar, 3,769,390.

Sumitomo Electric Industries, Ltd.: *See—*
Matsubara, Hironaga, 3,769,085.

Sump, Gary D.: *See—*
Caldwell, Joseph A.; Sump, Gary D.; and Benedict, Risque L., 3,769,521.

Sun Shipbuilding & Dry Dock Company: *See—*
Garber, Daniel C., 3,768,132.

Sund-Borg Machines Corporation: *See—*
Connolly, Denis, 3,768,952.

Sunderlin, Donald E., to Caterpillar Tractor Company. Clamshell-type, self-loading transport wagon. 3,768,184, Cl. 37-4.000.

Sunkist Growers, Inc.: *See—*
Conway, Tim D.; and Paddock, Paul F., 3,768,645.

Susami, Kozo: *See—*
Tabata, Masaaki; Susami, Kozo; and Edagawa, Hiroshi, 3,768,246.

Susemihl, Rolf. Portable and dismantleable concrete mixer. 3,768,785, Cl. 259-177.00r.

Sutherland, James F.: *See—*
Cook, Henry F.; and Sutherland, James F., 3,769,552.

Sutliff, Robert C.: *See—*
Edwards, Evan A.; Sutliff, Robert C.; and Tucker, Archie J., 3,768,747.

Sutures, Inc.: *See—*
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Suzue, Seisuke: *See—*
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Suzuki, Nobuo: *See—*
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Suzuki, Shoji: *See—*
Hashimoto, Sei; Nakatani, Keizo; Suzuki, Shoji; Daigo, Hiroshi; and Fujino, Ichizo, 3,769,244.

Suzuki, Yasuji, to Tokyo Shibaura Electric Co., Ltd. Logic circuit arrangement using insulated gate field effect transistors. 3,769,523, Cl. 307-205.000.

Svalbe, John W., to Magnetic Electronics, Inc. Pulse width modulator, an electrical circuit device to modulate width of electrical square shaped pulses. 3,769,609, Cl. 332-12.000.

Svercl, Josef; Bartos, Harald; and Planica, Jan, to Sigma, narondni podnik. Automatic double acting differential pump. 3,768,932, Cl. 417-393.000.

Swaanen, Petrus Henricus: *See—*
Bol, Arie; van Ginkel, Johannes; van der Schoot, Adrianus Henricus Maria; and Swaanen, Petrus Henricus, 3,768,154.

Swaney, Omer William, Jr., to Philco-Ford Corporation. Treatment of metal articles. 3,768,149, Cl. 29-527.200.

Swanke, Roy L.; and Leonard, Robert M., to Dynamics Corporation of America. Method of making a motor stator. 3,768,152, Cl. 29-596.000.

Swanson, Kermit E., to Donnelley, R. R., & Sons Company. Signature gathering machine with disc separator. 3,768,804, Cl. 271-101.000.

Swanson, Morris A.: *See—*
Grgurich, William A.; and Swanson, Morris A., 3,768,248.

Swedish Crucible Steel Company: *See—*
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Sweet, Richard Gordon: *See—*
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SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH: *See—*
Eberle, Dieter; Hanselmann, Dieter; and Prohaska, Hans, 3,769,476.

Swift, Harold E.: *See—*
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Swiltek, Donald J.: *See—*
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Sybron Corporation: *See—*
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Symons Corporation: *See—*
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Synvar Associates: *See—*
Cais, Michael; Gamble, Fred R., Jr.; and Osiecki, Jeanne Helen, 3,769,210.

Sytko, Thomas H., to General American Transportation Corporation. Flag plug for vessel openings. 3,768,849, Cl. 292-327.000.

Szumachowski, Edwin R.: *See—*
De Long, William T.; and Szumachowski, Edwin R., 3,769,491.
Delong, William T.; Szumachowski, Edwin R.; and Heverly, Harold R., 3,769,099.

Tabata, Masaaki; Susami, Kozo; and Edagawa, Hiroshi, to Toray Industries, Inc. Spun yarn and its doubled yarn and the process for manufacturing the same. 3,768,246, Cl. 57-156.000.

Tabler, Charles P., to Kornylak Corporation. Convertible roller way conveyor. 3,768,614, Cl. 193-37.000.

Tackett, Edd; and Broscoff, Mary Elizabeth. Glazier tool. 3,768,363, Cl. 90-61.00r.

Takahashi, Shigeaki: *See—*
Yasutomi, Shunichi; Takahashi, Shigeaki; and Nerio, Katsumasa, 3,768,244.

Takahashi, Tadao: *See—*
Yamagishi, Hidehisa; Kamata, Takashi; Ujiki, Yoshio; Yokoi, Fumitoshi; and Takahashi, Tadao, 3,769,068.

Takamatsu, Yukio: *See—*
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Takasu, Masao: *See—*
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Takayama, Katsuki: *See—*
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Takeda Chemical Industries, Ltd.: *See—*
Masuda, Katsutada; and Imashiro, Yoshio, 3,769,283.

Takei, Haruo: *See—*
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Tally Corporation: *See—*
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Tanaka, Kazuo: *See—*
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Tanaka, Yoshitaka: *See—*
Yukutomi, Masuo; Tanaka, Yoshitaka; Genda, Satosi; and Kitaura, Masaki, 3,769,349.

Tani, Toshiyuki: *See—*
Yamagami, Kisaburo; Enoki, Kichiji; Tani, Toshiyuki; Akimoto, Shiro; Futakuchi, Jiro; and Tayagaki, Hajimo, 3,769,322.

Taniguchi, Naonori, to Aida Engineering, Ltd. Blank feed device in a transfer press. 3,768,632, Cl. 198-218.000.

Tanner Electronic Systems Technology, Inc.: *See—*
Rist, Bruno A.; and Tanner, James L., 3,769,575.

Tanner, James L.: *See—*
Rist, Bruno A.; and Tanner, James L., 3,769,575.

Tariel, Henri; Guyon, Roger; Gagneux, Yves; Muller, Franck; and Louis, Yves, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Thermal insulation of receptacles for cryogenic fluids. 3,769,118, Cl. 156-71.000.

Tate, Jack F., to Texaco Inc. Method for controlling unconsolidated sand in an oil well with permeable cement. 3,768,561, Cl. 166-281.000.

Taub, David: *See—*
Kuo, Chan Hwa; Taub, David; and Wendler, Norman L., 3,769,306.

Tauster, Samuel J.; and Sinfelt, John H. Aromatization catalyst. 3,769,238, Cl. 252-465.000.

Tavares, Robert F.: *See—*
Easter, William M., Jr.; and Tavares, Robert F., 3,769,303.
Nikawitz, Edward J.; Tavares, Robert F.; and Easter, William M., Jr., 3,769,330.

Tayagaki, Hajimo: *See—*
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Taylor, Abraham; and Doyle, Norman J., to Westinghouse Electric Corporation. Method of producing cubic boron nitride with aluminum containing catalyst. 3,768,972, Cl. 23-300.000.

Taylor, George A.: *See—*
Anderberg, Axel W.; and Taylor, George A., 3,768,204.

Taylor Lock Company: *See—*
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Taylor, William Odell. Apparatus for relaxing feet. 3,768,461, Cl. 128-24.200.

Team Industries: *See—*
Sjoman, Carl F., 3,768,802.

Teasdale, Thomas S.: *See—*
Allen, Joseph C.; and Teasdale, Thomas S., 3,768,558.
Allen, Joseph C.; and Teasdale, Thomas S., 3,768,559.

Technar Incorporated: *See—*
Bell, Lon E.; and Gruber, William P., 3,769,472.

Teeter, Wallis L., to United States of America, Navy. Raindrop image recording analyzer system. 3,769,633, Cl. 346-107.00r.

Teijin Limited: *See—*
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Terrell, Ross C., to Airco, Inc. Inhalation anesthetic or analgesic method and composition. 3,769,434, Cl. 424-342.000.

Terry, Colin Alfred; and Walker, Peter, to United Kingdom Atomic Energy Authority. Silicate paints. 3,769,050, Cl. 106-84.000.

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Thompson, Robert F.; and McDonell, John W., to Eaton Corporation. Vehicle guidance system. 3,768,586, Cl. 180-98.000.

Thompson, Vernon F., to Tomco, Inc. Expandable carburetor fitting. 3,768,839, Cl. 285-15.000.

Thomson, James K., to Northrop Corporation. Area electron flood gun. 3,769,540, Cl. 315-12.000.

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Tobias, James R. Granular material spreader. 3,768,737, Cl. 239-666.000.

Tocquet, Bernard; and Personnic, Marcel. Mechanical decoupling device for attachment to electroacoustic transducers. 3,769,532, Cl. 310-8.900.

Toda, Gyozo: *See—*
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Yamazaki, Masami, to Victor Company of Japan, Ltd. Compressing and/or expanding circuit having non-linear control circuit to reduce modulation noise. 3,769,612, Cl. 333-14.000.
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Yasutomi, Shunichi; Takahashi, Shigeaki; and Nerio, Katsumasa, to Nihon Spindle Seizo Kabushiki Kaisha. Ring rail lifting apparatus for spinning machinery. 3,768,244, Cl. 57-98.000.
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Yew, Ming-Chih, to General Motors Corporation. Vehicle leveling control with vacuum regulator valve means. 3,768,820, Cl. 280-6.00r.
Yocum, Fred D. Molded loudspeaker diaphragm. 3,768,590, Cl. 181-32.00r.
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Yoo, Byong W. Method of sprouting beans. 3,768,201, Cl. 47-16.000.
Yoshida, Banzo. Pneumatic transporter. 3,768,418, Cl. 104-161.000.
Yoshimoto, Toshio; Imamura, Takaaki; and Tanaka, Kazuo. Rubbery compositions. 3,769,256, Cl. 260-41.0sa.
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Yost, Edward F., Jr., to Spectral Data Corporation. Continuously-variable, solid-angle filter. 3,768,898, Cl. 353-31.000.
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Young, Donald C.; and Harbolt, Bruce A., to Union Oil Company of California. Method for the preparation of porous, particulate sulfur. 3,769,378, Cl. 264-11.000.
Young, James E. Imaging method and materials. 3,769,012, Cl. 96-48.00r.
Young, Robert B., to Pan Nova, Inc. Change calculating coin-return system. 3,768,617, Cl. 194-13.000.
Youngers, Gerald P. Loader and unloader apparatus. 3,768,678, Cl. 214-517.000.
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Yukutomi, Masuo; Tanaka, Yoshitaka; Genda, Satosi; and Kitaura, Masaki, to Kyodo Chemical Co., Ltd. Process for preparing 2,4-dihydroxybenzophenone. 3,769,349, Cl. 260-591.000.
Yurko, Joseph A.; Ramachandran, Pallassana; Cheng, Bao-Ding; and Dickson, Robert E., to Colgate Palmolive Company. Free flowing nonionic surfactants. 3,769,222, Cl. 252-89.000.
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Zanoni, Carl A., to Zygo Corporation. Detecting the position of a surface by focus modulating the illuminating beam. 3,768,910, Cl. 356-167.000.
Zarumb, Solomon. Remote sensing apparatus and methods. 3,768,908, Cl. 356-113.000.
Zatell, Vincent A., to Universal Oil Products Company. Method of modifying a tinned tube for boiling enhancement. 3,768,290, Cl. 72-68.000.
Zbinden, Rudolf. Cold circular saw. 3,768,358, Cl. 83-466.100.
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Schromm, Kurt; Mentrup, Anton; Zeile, Karl; Renth, Ernst-Otto; Engelhardt, Albrecht; and Traunecker, Werner, 3,769,430.
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Zeitlin, Edward J.; and Leighton, Lee, to Zeitlin, Edward J. Electric immersion heater assembly. 3,769,493, Cl. 219-335.000.
Zenith Radio Corporation: *See*—
Hendrickson, Melvin C., 3,769,590.
Zerand Corporation: *See*—
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Zernov, Peter; and Abler, Norman C., to Zerand Corporation. Stacker. 3,768,382, Cl. 93-93.0dp.
Zievers, James F., to Industrial Filter & Pump Mfg. Co. Continuous ion exchange system. 3,768,650, Cl. 210-140.000.
Zinn, Walter H.; and Lichtenberger, Harold V., to Combustion Engineering, Inc. Fuel element grid support for nuclear reactor. 3,769,159, Cl. 176-78.000.
Zinnes, Harold; and Lindo, Neil A., to Warner-Lambert Company. N-(pyridyl)2H 1-benzothiopyran-3-carboxamide-4-hydroxy 1,1-dioxides. 3,769,292, Cl. 260-294.80c.
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LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 30TH DAY OF OCTOBER, 1973

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Bissot, Thomas C., and V. C. Wolff, Jr. Aqueous dispersions of ethylene copolymers and processes for their preparation. T915,015, 10–30–73, Cl. 260—29.

Chow, Tseng K., and A. B. Wills, to International Business Machines Corp. Bidirectional magnetic head. T915,016, 10–30–73, Cl. 340—174.

Du Pont de Nemours, E. I., and Co.: *See*—
Fryd, Michael, and Wald. T915,009.
Goldman, Max. T915,014.
Hoover, James R., and MacLachlan. T915,011.

Fryd, Michael, and D. K. Wald, to E. I. du Pont de Nemours and Co. Conjunctive polymers. T915,009, 10–30–73, Cl. 260—875.

Goldman, Max, to E. I. du Pont de Nemours and Co. Tubular thermoplastic film temperature control. T915,014, 10–30–73, Cl. 264—95.

Hartmann, Francis M., R. A. Jones, T. E. Larson, K. R. McNary, and J. T. Zahorsky, to International Business Machines Corp. Computer output display. T915,012, 10–30–70, Cl. 340—324.

Hoover, James R., and J. D. MacLachlan, to E. I. du Pont de Nemours and Co. Fluorcelastomer composition. T915,011, 10–30–73, Cl. 260—836.

International Business Machines Corp.: *See*—
Chow, Tseng K., and Wills. T915,016.
Hartmann, Francis M., Jones, Larson, McNary, and Zahorsky. T915,012.
Jones, Richard A., Larson, McNary, Mosher, Vincent, and Zahorsky. T915,013.

Jones, Richard A.: *See*—
Hartman, Francis M., Jones, Larson, McNary, and Zahorsky. T915,012.

Jones, Richard A., T. E. Larson, K. R. McNary, L. G. Mosher, W. R. Vincent, and J. T. Zahorsky, to International Business Machines Corp. Selector light pen system. T915,013, 10–30–73, Cl. 340—324.

Kepner, Larry A., and P. Liang. Four-speed automatic transmission mechanism having three simple planetary gear units. T915,010, 10–30–73, Cl. 74—763.

Larson, Theodore E.: *See*—
Hartmann, Francis M., Jones, Larson, McNary, and Zahorsky. T915,012.
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Liang, Po-Lung: *See*—
Kepner, Larry A., and Liang. T915,010.

MacLachlan, James D.: *See*—
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McNary, Kenneth R.: *See*—
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Jones, Richard A., Larson, McNary, Mosher, Vincent, Zahorsky. T915,013.

Mosher, Lawrence G.: *See*—
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Vincent, William R.: *See*—
Jones, Richard A., Larson, McNary, Mosher, Vincent, and Zahorsky. T915,013.

Wald, David K.: *See*—
Fryd, Michael, and Wald. T915,009.

Wills, Arthur B.: *See*—
Chow, Tseng K., and Wills. T915,016.

Wolff, Vernon C., Jr.: *See*—
Bissot, Thomas C., and Wolff. T915,015.

Zahorsky, James T.: *See*—
Hartmann, Francis M., Jones, Larson, McNary, and and Zahorsky. T915,012.
Jones, Richard A., Larson, McNary, Mosher, Vincent, and Zahorsky. T915,013.

LIST OF REISSUE PATENTEES

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Aluminum Co., of America: *See*—
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Attebery, Jerry M.: *See*—
Dienst, Carl S., and Attebery. Re. 27,806.

Baker, Mark A., and C. B. Rawlins, to Aluminum Co., of America. Self-damping cable. Re. 27,805, 10–30–73, Cl. 174—130.

Bell Telephone Laboratories, Inc.: *See*—
Laane, Rein R. Re. 27,798.

Bock, Robert V.: *See*—
Carlson, Carl B., and Bock. Re. 27,791.

Burroughs Corp.: *See*—
Carlson, Carl B., and Bock. Re. 27,791.
Schneider, Stanley, and Tillman. Re. 27,801.

Burrus, Thomas W., to RCA Corp. Blanking circuits for television receivers. Re. 27,793, 10–30–73, Cl. 178—7.50.

Carlson, Carl B., and R. V. Bock, to Burroughs Corp. Digital computer with memory lock operation. Re. 27,791, 10–30–73, Cl. 340—172.50.

Chen, Richard J., to Polaroid Corp. Air venting means for photographic film unit. Re. 27,795, 10–30–73, Cl. 95—13.

Ciba-Geigy AG: *See*—
Schwander, Hans R., Zenhausern, and Hindermann. Re. 27,800.

Continental Can Co., Inc.: *See*—
Stec, Frederick J. Re. 27,796.

Dienst, Carl S., and J. M. Attebery, to Swanson, Emery Carlton. Process for separating protein from aqueous solutions containing dissolved material of lower molecular weight using a thin bed of molecular sieve material. Re. 27,806, 10–30–73, Cl. 260—112.

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Hindermann, Peter: *See*—
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Howerin, Charles R. and M. W. Humphreys, deceased by M. W. Humphreys; said Humphreys assignor to said Howerin. Cleaning machine. Re. 27,792, 10–30–73, Cl. 15—321.

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Motorola Inc.: *See*—
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Otani, Sugio, to Kureha Kagaku Kogyo Kabushiki Kaisha. Heat treatment of molten carbonaceous material prior to its conversion to carbon fibers and other shapes. Re. 27,794, 10–30–73, Cl. 264—29.

Polaroid Corp.: *See*—
Chen, Richard J. Re. 27,795.

RCA Corp.: *See*—
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Rawlins, Charles B.: *See*—
Baker, Mark A., and Rawlins. Re. 27,805.

Ring, Wallace H.: *See*—
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Schneider, Stanley, and R. M. Tillman, to Burroughs Corp. Electromagnetic transducers. Re. 27,801, 10–30–73, Cl. 340—174.

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Shimizu, Yoshiyuki, to Nippon Kogaku K.K. Retrofocus-type wide-angle camera lens. Re. 7,799, 10–30–73, Cl. 350—214.

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Tillman, Robert M.: *See*—
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Treadway, Ronald L., to Motorola Inc. Transistor-transistor logic circuits having improved voltage transfer characteristic. Re. 27,804, 10–30–73, Cl. 307—300.
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Burke, George K., and K. Raines, to Burron Medical Products, Inc. Piercing device for a dual compartment medicament container. 228,968, 10–30–73, Cl. D83—12.
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Figueroa, Richard G., to Concept Design America, Ltd. Swimming pool. 228,891, 10–30–73, Cl. D13—1.
Firdmann, Jacques, to Etablissements Allibert Monestier-de-Clermont. Holder for toilet paper rolls. 228,849, 10–30–73, Cl. D6—97.
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CLASS 90
12R 3,768,363
15 3,768,364
15.1R 3,768,365

CLASS 91
1 3,768,366
361 3,768,367
378 3,768,368
3,768,369
391R 3,768,370
411R 3,768,371
412 3,768,372
417 3,768,373
419 3,768,374
459 3,768,375
466 3,768,376
486 3,768,377
499 3,768,378

CLASS 92
99 3,768,379

CLASS 93
36R 3,768,380
53LF 3,768,381
93DP 3,768,382

CLASS 95
1R 3,768,385
4.5 3,768,384
10CE 3,768,386
11R 3,768,387
13 Re.27,795
31AC 3,768,389
31R 3,768,388
53EA 3,768,390
64B 3,768,391
89R 3,768,392
100 3,768,393

CLASS 96
1R 3,769,009
1.5 3,769,010
1.6 3,769,011
48R 3,769,012
49 3,769,013
61M 3,769,015
61 3,769,014
3,769,016
76R 3,769,017
84R 3,769,019
85 3,769,020
91R 3,769,018
3,769,021
114.5 3,769,022
115P 3,769,023
124 3,769,024
3,769,025
126 3,769,026

CLASS 98
36 3,768,394
40B 3,768,395

CLASS 100
26 3,768,396
30 3,768,397
45 3,768,398
229A 3,768,399
258R 3,768,400

CLASS 101
4 3,768,401
92 3,768,402
93C 3,768,403
269 3,768,404
407 3,768,405
409 3,768,406

CLASS 102
8 3,768,407
21.6 3,768,408
22 3,768,409
24R 3,768,410
3,768,411
38 3,768,412
46 3,768,413
67 3,768,414
70.26F 3,768,415

CLASS 104
135 3,768,416
148SS 3,768,417
161 3,768,418

CLASS 105
182R 3,768,419
197D 3,768,420
366D 3,768,421
409 3,768,422

CLASS 106
2 3,769,043
19 3,769,045
38.22 3,769,046
38.3 3,769,044
47Q 3,769,047
49 3,769,048
73.4 3,769,049
84 3,769,050
90 3,769,051
111 3,769,052
288B 3,769,053
3,769,054

CLASS 108
51 3,768,423

CLASS 110
8R 3,768,424

CLASS 111
85 3,768,425

CLASS 114
39 3,768,426
41 3,768,427
42 3,768,428
43.5 3,768,429
66.5H 3,768,430

CLASS 115
22.3 3,768,431
42 3,768,432

CLASS 116
28R 3,768,433
63R 3,768,383
63 3,768,434
114R 3,768,435
124B 3,768,436
137A 3,768,437

CLASS 117
3.1 3,769,055
5.5 3,769,056
10 3,769,058
33.5R 3,769,059
36.2 3,769,057
3,769,062
37R 3,769,060
41 3,769,063
47A 3,769,061
49 3,769,064
54 3,769,065
63 3,769,066
3,769,067
65.2 3,769,068
75 3,769,069
94 3,769,070
122P 3,769,071

126AF 3,769,072
136 3,769,073
3,769,074
3,769,075
3,769,076
3,769,077
3,769,078
3,769,079
3,769,080
3,769,081
3,769,082
3,769,083
216 3,769,084
218 3,769,085
228 3,769,086
234 3,769,087

CLASS 118

262 3,768,438
315 3,768,439
503 3,768,440

CLASS 119

1 3,768,441
18 3,768,442
22 3,768,443
3,768,444
109 3,768,445

CLASS 122

1 3,768,446
421 3,768,447
510 3,768,448

CLASS 123

32EA 3,768,449
103 3,768,450
117A 3,768,451
119A 3,768,452
119F 3,768,453
122E 3,768,454
148E 3,768,455

CLASS 124

35A 3,768,456

CLASS 126

120 3,768,457
350R 3,768,458

CLASS 128

2S 3,768,459
17 3,768,460
24.2 3,768,461
44 3,768,462
67 3,768,463
75 3,768,464
136 3,768,465
142.2 3,768,466
145R 3,768,467
145.8 3,768,468
3,768,469
152 3,768,470
159 3,768,471
214.4 Re.27,797
218NV 3,768,473
218P 3,768,472
220 3,768,474
225 3,768,475
275 3,768,476
276 3,768,477
3,768,478
287 3,768,479
3,768,480
288 3,768,481
303.1 3,768,482
368 3,768,483
400 3,768,484
402 3,768,485
419P 3,768,486
3,768,487
533 3,768,488

CLASS 129

432 3,768,144

CLASS 131

261B 3,768,489

CLASS 132

7 3,768,490
36R 3,768,491
39 3,768,492

CLASS 134

46 3,768,493

CLASS 135

20R 3,768,494
51 3,768,495

CLASS 136

3 3,769,088
83R 3,769,089
86R 3,769,090
89 3,769,091
100R 3,769,092
120FC 3,769,093
122 3,769,094
166 3,769,095
213 3,769,096

CLASS 137

1 3,768,496
38 3,768,497
43 3,768,498
93 3,768,499
119 3,768,500
231 3,768,501
340 3,768,502
377 3,768,503
409 3,768,504
433 3,768,505
458 3,768,506
504 3,768,507
522 3,768,508
539 3,768,509
551 3,768,510
597 3,768,511
601 3,768,512
606 3,768,513
609 3,768,514
625.46 3,768,516
625.6 3,768,515
625.65 3,768,517
625.66 3,768,518
627.5 3,768,519
809 3,768,520
832 3,768,521

CLASS 138

40 3,768,522
141 3,768,523

CLASS 139

159 3,768,524

CLASS 140

147 3,768,525

CLASS 141

130 3,768,526

CLASS 142

38 3,768,527

CLASS 144

34E 3,768,528
309AC 3,768,529
318 3,768,530

CLASS 148

6.24 3,769,098
9R 3,769,097
26 3,769,099
126 3,769,100
127 3,769,101
130 3,769,102
147 3,769,103
175 3,769,104
3,769,105

CLASS 149

18 3,769,106
19.6 3,769,107

CLASS 150

32 3,768,531

CLASS 152

151 3,768,532
209R 3,768,535
239 3,768,533
3,768,534
3,768,536
330 3,768,537
410 3,768,538

CLASS 156

3 3,769,108
3,769,109
5 3,769,111
6 3,769,110
11 3,769,112
24 3,769,113
59 3,769,114
62.2 3,769,115
62.8 3,769,116
69 3,769,117
71 3,769,118
83 3,769,119
84 3,769,120
96 3,769,121
115 3,769,122
116 3,769,123
159 3,769,124
166 3,769,125
172 3,769,126
3,769,127
185 3,769,128
209 3,769,129
259 3,769,130
283 3,769,131
286 3,769,132
3,769,133
293 3,769,134
306 3,769,135
308 3,769,136
309 3,769,137
310 3,769,138
331 3,769,376
358 3,769,139
502 3,769,140
504 3,769,141

CLASS 159

13A 3,768,539

CLASS 160

23R 3,768,540

CLASS 161

50 3,769,144
53 3,769,142
68 3,769,145
79 3,769,146
82 3,769,147
123 3,769,148
156 3,769,143
172 3,769,149
182 3,769,150
204 3,769,151

CLASS 162

65 3,769,152
216 3,769,153
340 3,769,154
343 3,769,155

CLASS 164

52 3,768,541
155 3,768,542
252 3,768,543
376 3,768,544

CLASS 165

27 3,768,545
39 3,768,546
45 3,768,547
47 3,768,548
55 3,768,549
76 3,768,550
93 3,768,551
107 3,768,552
120 3,768,553
134 3,768,554

CLASS 166

67 3,768,555
154 3,768,556
228 3,768,557
272 3,768,558
3,768,559
274 3,768,560
281 3,768,561
289 3,768,562
291 3,768,563
307 3,768,564
308 3,768,565
3,768,566

CLASS 169

26 3,768,567

CLASS 172

7 3,768,568
9 3,768,570
17 3,768,569
26.5 3,768,571
112 3,768,572

CLASS 173

12 3,768,573
23 3,768,574
43 3,768,575
93 3,768,577
150 3,768,578
164 3,768,579

CLASS 174

38 3,769,443
75C 3,769,444
101 3,769,445
130 Re.27,805
143 3,769,446
3,769,447

CLASS 175

251 3,768,580
329 3,768,581

CLASS 176

19 3,769,156
38 3,769,157
73 3,768,576
78 3,769,158
3,769,159
86R 3,769,160
87 3,769,161

CLASS 178

5.1 3,769,448
5.2R 3,769,458
5.4CD 3,769,449
5.4R 3,769,450
6 3,769,451
3,769,452
3,769,453
6.6B 3,769,455
6.8 3,769,456
7.2 3,769,457
7.5R Re.27,793
58 3,769,454

CLASS 179

1VE 3,769,460
1VL 3,769,459
7.1TP 3,769,463
15AT 3,769,461
18AD 3,769,462
18GF Re.27,798
100.2CA 3,769,467
100.2MD 3,769,465
100.2D 3,769,469
100.2S 3,769,464
3,769,470
100.3B 3,769,468
170.4 3,769,466

CLASS 180

1FV 3,768,582
7A 3,768,821
14R 3,768,583
73R 3,768,584
79.2P 3,768,585
98 3,768,586
114 3,768,587
124 3,768,588

CLASS 181

31B 3,768,589
32R 3,768,590

CLASS 182

2 3,768,591
22 3,768,592
77 3,768,593
210 3,768,594

CLASS 187

9 3,768,595
21 3,768,596
88 3,768,597

CLASS 188

1A 3,768,598
5 3,768,599
62 3,768,600
71.9 3,768,601
3,768,602
72.3 3,768,603
73.3 3,768,604
73.5 3,768,605
112 3,768,606
165 3,768,607
170R 3,768,608
184 3,768,609

CLASS 190

43 3,768,610

CLASS 192

105BA 3,768,611
111A 3,768,612
113B 3,768,613

CLASS 193

37 3,768,614

CLASS 194

2 3,768,615
4R 3,768,616
13 3,768,617
102 3,768,618

CLASS 195

1.8 3,769,162
3,769,163
2 3,769,164
28N 3,769,165
51R 3,769,166
66R 3,769,167
3,769,168
80 3,769,169
82 3,769,170
103.5R 3,769,171
3,769,172
3,769,173
127 3,769,174
139 3,769,175
142 3,769,176

CLASS 197

6.4 3,768,619
18 3,768,620
3,768,621
19 3,768,622
3,768,623

CLASS 198

1 3,768,624
20 3,768,625
26 3,768,626
33AA 3,768,627
54 3,768,628
110 3,768,629
127R 3,768,630
189 3,768,631
218 3,768,632

CLASS 200

31 3,769,471
61.45R 3,769,472
61.58R 3,769,473
76 3,769,474
81.9 3,769,475
85A 3,769,476
146R 3,769,477
3,769,478
148A 3,769,479
157 3,769,480
161 3,769,481
167R 3,769,482

CLASS 203

53 3,769,217
71 3,769,177

CLASS 204

1T 3,769,178
24 3,769,179
35N 3,769,180
35R 3,769,181
43S 3,769,182
55R 3,769,184
55Y 3,769,183
71 3,769,185
149 3,769,186
181 3,769,187
186 3,769,188
195R 3,769,189
197 3,769,190
201 3,769,191
3,769,192
213 3,769,193
224 3,769,194
244 3,769,195
275 3,769,196

CLASS 206

5A 3,768,633
16.6 3,768,634
17 3,768,635
42 3,768,636
44R 3,768,637
45.19 3,768,639
45.34 3,768,638
50 3,768,640
52R 3,768,641
56R 3,768,642
65K 3,768,643

CLASS 208

8 3,769,197
10 3,769,198
28 3,769,199
53 3,769,200
65 3,769,201
111 3,769,202
164 3,769,203

CLASS 209

74R 3,768,644
111.5 3,768,645
166 3,768,646
364 3,768,647

CLASS 210

6 3,769,204
21 3,769,205
22 3,769,206
44 3,769,207
57 3,769,208
83 3,768,648
96 3,768,649
140 3,768,650
169 3,768,651
3,768,652
188 3,768,653
232 3,768,654
236 3,768,655
242 3,768,656
298 3,768,657
304 3,768,658
313 3,768,659
321 3,768,660
449 3,768,661

CLASS 211

4 3,768,662
60S 3,768,663

CLASS 212

3 3,768,664
38 3,768,665
128 3,768,666

CLASS 214

1BB 3,768,667
27 3,768,668
64 3,768,669
75H 3,768,670
77R 3,768,671
82 3,768,672
83.24 3,768,673
132 3,768,674
310 3,768,675
392 3,768,676
506 3,768,677
517 3,768,678
519 3,768,679
652 3,768,680

CLASS 215

9 3,768,681
11B 3,768,682
3,768,683
100R 3,768,684
3,768,685

CLASS 219

10.57 3,769,484
56 3,769,485
69C 3,769,483
76 3,769,486
104 3,769,487
121LM 3,769,488
125R 3,769,489
137 3,769,491
262 3,769,492
335 3,769,493
363 3,769,494
433 3,769,495

CLASS 220

1.5 3,768,686
9R 3,768,687
23 3,768,688
24A 3,768,689
38 3,768,690
40R 3,768,691
54 Re.27,796
3,768,692
3,768,693

CLASS 221

221 3,768,694
227 3,768,695

CLASS 222

29 3,768,696
80 3,768,697
91 3,768,698
103 3,768,699
107 3,768,700
129.4 3,768,701
167 3,768,702
182 3,768,703
207 3,768,704
213 3,768,705
325 3,768,706
402.13 3,768,707
557 3,768,708

CLASS 224

5D 3,768,709
45S 3,768,711
48A 3,768,710

CLASS 225

3 3,768,712
34 3,768,713
134 3,769,225

CLASS 226

37 3,768,714
40 3,768,715
113 3,768,716
198 3,768,717

CLASS 228

3 3,768,718

CLASS 229

14B 3,768,719
15 3,768,720
40 3,768,721
47 3,768,722
51TS 3,768,723
53 3,768,724
66 3,768,725

CLASS 233

16 3,768,726
26 3,768,727

CLASS 235

92DM 3,769,496
92FL 3,769,497
151.33 3,769,498
172 3,769,499
197 3,769,500

CLASS 236

12R 3,768,728
13 3,768,729
93 3,768,730
3,768,731

CLASS 239

70 3,768,732
331 3,768,733
333 3,768,734
428.5 3,768,735
504 3,768,736
666 3,768,737

CLASS 240

1.3 3,769,501
4 3,769,502
41.35R 3,769,503
108A 3,769,504

CLASS 241

24 3,768,738
32.5 3,768,744
65 3,768,739
68 3,768,740
82.1 3,768,741
100.5 3,768,742
101.2 3,768,743

CLASS 242

43 3,768,745
58.3 3,768,746
71.2 3,768,747
71.7 3,768,748
72 3,768,749
74.2 3,768,750
158.2 3,768,751
185 3,768,752
197 3,768,753

CLASS 244

1SA 3,768,756
1SC 3,768,754
3.24 3,768,755
17.23 3,768,757
108 3,768,758

121 3,768,759
123 3,768,760
138R 3,768,761
155R 3,768,762

CLASS 248

97 3,768,763
118 3,768,764
146 3,768,765
188.2 3,768,766
226C 3,768,767
456 3,768,768

CLASS 249

65 3,768,769

CLASS 250

225 3,769,512
290 3,769,513
303 3,769,511
326 3,769,506
341 3,769,514
3,769,515
363 3,769,516
367 3,769,509
369 3,769,508
394 3,769,505
395 3,769,507
432 3,769,490
455 3,769,517
459 3,769,510
472 3,769,518

CLASS 251

25 3,768,770
38 3,768,771
129 3,768,772
147 3,768,773
175 3,768,774
230 3,768,775
231 3,768,776
319 3,768,777

CLASS 252

8.55D 3,769,209
25 3,769,210
32FE 3,769,211
33 3,769,212
33.4 3,769,213
34F 3,769,214
49.5 3,769,215
51.5R 3,769,216
62.59 3,769,219
62.9 3,769,218
75 3,769,220
78 3,769,221
89 3,769,222
3,769,223
99 3,769,224
182 3,769,226
188.3 3,769,227
3,769,228
301.2R 3,769,229
301.4H 3,769,230
316 3,769,231
359E 3,769,232
429A 3,769,233
442 3,769,234
455R 3,769,235
463 3,769,236
464 3,769,237
465 3,769,238
3,769,239
468 3,769,240
469 3,769,241
542 3,769,242
558 3,769,243

CLASS 254

2B 3,768,778
51 3,768,779

CLASS 256

1 3,768,780
3,768,781

CLASS 259

4 3,768,782
3,768,783
169 3,768,784
177R 3,768,785
179 3,768,786

CLASS 260

2.5AC 3,769,244
2.5AM 3,769,245
5 3,769,246
17R 3,769,247
17.4ST 3,769,248
25Q 3,769,286
28 3,769,249
29.2EP 3,769,250
29.6TA 3,769,251
32.8R 3,769,252
33.4PQ 3,769,254
33.6SB 3,769,253
40R 3,769,260
41A 3,769,255
41.5MP 3,769,257
41.5A 3,769,256
45.7S 3,769,262
45.75K 3,769,263
45.8N 3,769,258
3,769,259
45.9R 3,769,261
75NT 3,769,265
75R 3,769,264
80PS 3,769,266
83.7 3,769,267
89.5A 3,769,268
91.7 3,769,269
93.7 3,769,373
94.3 3,769,270
112R Re.27,806
112.5 3,769,271
124R 3,769,272
210AB 3,769,273
239BF 3,769,274
239R 3,769,276
239.3B 3,769,275
240G 3,769,278
3,769,279
243C 3,769,277
3,769,280
3,769,281
244R 3,769,282
247.2A 3,769,283
247.7K 3,769,284
250R 3,769,285
256.4F 3,769,288
256.5R 3,769,287
260 3,769,290
293.56 3,769,289
294.8C 3,769,292
296R 3,769,291
307B 3,769,296
307F 3,769,293
3,769,295
308B 3,769,294
315 3,769,297
3,769,298
326.11 3,769,299
326.21 3,769,300
326.45 3,769,301
335 3,769,302
338 3,769,303
346.6 3,769,304
374 Re.27,800
376 3,769,305
397.1 3,769,306
404.5 3,769,307
438.1 3,769,308
448.2N 3,769,309
448.2P 3,769,310
453R 3,769,312
459 3,769,311
463 3,769,313
3,769,314
465.8 3,769,315
468K 3,769,316
471A 3,769,317
471C 3,769,318
3,769,319
473R 3,769,320
473S 3,769,321
475PR 3,769,323
475P 3,769,322
476R 3,769,324
3,769,325
3,769,326
479R 3,769,327
486R 3,769,328
3,769,336
488K 3,769,329
488R 3,769,330
491 3,769,331
513R 3,769,332
518A 3,769,333
519 3,769,334
3,769,335
535P 3,769,337
3,769,338
536 3,769,339
543R 3,769,340
554 3,769,341
556AR 3,769,343
556S 3,769,342
563R 3,769,345
566R 3,769,344
567.6P 3,769,346
584R 3,769,347
590 3,769,348
591 3,769,349
592 3,769,350
611A 3,769,351
623H 3,769,353
644 3,769,354
3,769,355
3,769,356
3,769,357
667 3,769,358
669P 3,769,359
672T 3,769,360
673 3,769,361
677XA 3,769,362
683.15B 3,769,363
834 3,769,365
857PA 3,769,366
860 3,769,367
877 3,769,368
887 3,769,369
889 3,769,370
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958 3,769,377

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61 3,769,382
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95	3,768,957
208	3,768,958
255	3,768,959
266	3,768,960
278	3,768,961
353	3,768,962

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D29—	23	228,925
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